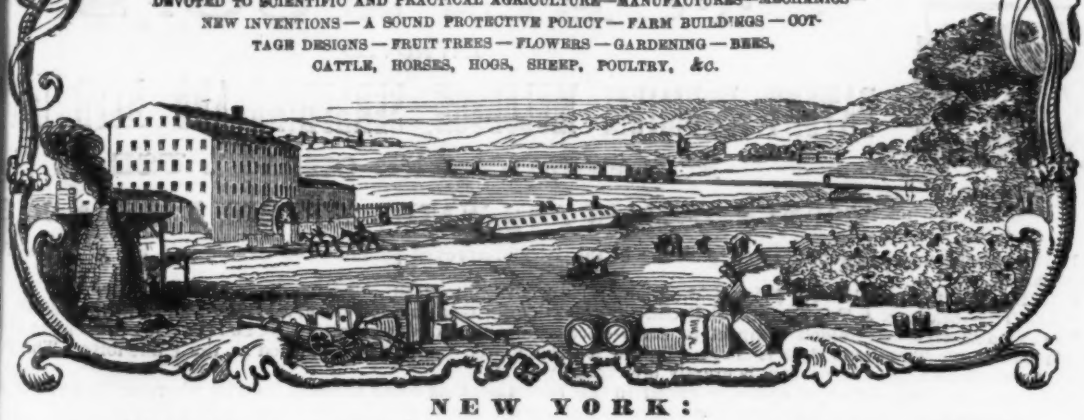
No. 4. Oct., 1854. Vol. 7.

THE PLOUGH

THE LOOM AND THE ANVIL.

FARMER AND MECHANIC.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILDINGS—COTTAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES, CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.



NEW YORK:
PUBLISHED BY MYRON FINCH, No. 9 SPRUCE STREET.

☞ *All Letters containing moneys, and sent by mail for this Journal, should be directed to the office at No. 9 Spruce Street, New-York.*

For Prospectus, Terms, Postage, Contents, &c., see next page of Cover.

The Plough, the Loom, and the Anvil.

The Plough, the Loom, and the Anvil, is issued MONTHLY, and contains SIXTY-FOUR PAGES of closely printed matter, richly embellished with appropriate engravings, and will hereafter be published at the following

GREATLY REDUCED RATES OF SUBSCRIPTION:

One Copy	**one year payable in advance,**		**$3 00**
Two Copies, $2.50 each,	"	"	**5 00**
Five " 2.00 "	"	"	**10 00**
Ten " 1.50 "	"	"	**15 00**

All letters should be post-paid, and addressed to MYRON FINCH
OFFICE OF THE PLOUGH, THE LOOM, AND THE ANVIL, No. 9 Spruce St., New-York.

POSTAGE.

THE PLOUGH, THE LOOM, AND THE ANVIL to actual subscribers is chargeable in any part of the United States, when paid quarterly or yearly in advance, at only 18 and 3-4 Cents per Year

WM. WHITE SMITH, of Philadelphia, is our Agent for Pennsylvania. S. D. ALLEN is General Agent for this Journal.

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The Plough, the Loom, and the Anvil.

Vol. VII. OCTOBER, 1854. No. 4.

BUILDING MATERIALS.

Among the richest and most valuable of the lands of this or any other country, those which contain iron and coal have been found to excel all others. Though their surfaces are a mere "barren rock," and the possibility of cultivation not a question even for consideration, they are worth more per acre than any other description of property.

But next, perhaps, to estate of this description, lands which contain building material may be classed, provided they are in the vicinity of a market, or if their products can be transported to market at reasonable cost. We propose to describe some of these products of our own country, and state their peculiar merits. The most valuable of all these rocks is

Marble.

Marble is the carbonate of lime, or lime-stone, though often mingled with foreign matter. But all carbonates of lime are not marble. The distinction is this: Lime-stone that will take a polish is marble. The coarsest lime-stones make a good building material, and may be even unsurpassed in an economical aspect, but they are suited only to those structures which can dispense with the finer kinds of ornament. Like granite, to be described hereafter, it is suited to every kind of structure in which the gigantic, the strong, or the durable is involved, rather than the elegant and the beautiful. All that is properly called lime-stone may be converted into quick-lime, under the heat of a moderate furnace, and will effervesce when acids are poured upon them. A single drop of any strong acid is a test that will never fail.

Lime-stones run into marls at one extreme, and at the other terminate in the purest marble. The "older" lime-stones contain some of the oxides of iron, the sulphuret of lead, or of zinc, manganese, etc. The "more recent," often contain fossils of various kinds.

Of marbles there are many varieties. One obvious distinction is into white, dark, and mottled. Of the mottled marble, different colors are produced by different mixtures of foreign substances with it, and the purest marbles are those which are perfectly white.

The various tints of marble are generally produced by the presence of certain oxides of iron. The blue and the green are the effect, sometimes, of the presence of hornblende. The black is produced by charcoal. Sometimes sulphur and bitumen are mixed with the marble, but their presence is readily detected by its odor.

The *verd antique* of the ancients is a kind of breccia or conglomerate, the paste of which consists of a mixture of talc and lime-stone, while the green fragments, held together by the paste, are *serpentine*. In the verd antique

found in England, the white is lime-stone, and the green, serpentine and asbestos.

Fragmentary marbles are divided into two kinds. When the fragments are angular, the specimen is called Breccia marble; when they are rounded, it is called Pudding-stone marble. Shells are often found in marble. Such specimens are called Shell-marble. The Lumachella marble is composed entirely of shells. Animal remains are sometimes seen in marble, which is then called Madriporic.

Marbles have been imported into this country in very great quantities, and have brought very high prices. The opinion used to prevail extensively, perhaps universally, that the *native* marble was almost worthless. It certainly sold in the markets for a mere fraction of the cost of the imported. Nor was this because no handsome marbles were quarried. The following anecdote was related to us, a few years ago, by a large owner of marble quarries. He had given his attention chiefly to the white variety, but determined to try a specimen of the variegated. A single slab was finished and sent to his Boston dealer, who placed it among his other native specimens. No purchaser was found for it. After a while he directed that this should be placed among his Italian slabs. A customer called and was shown into the foreign department. After surveying the assortment, he selected the Vermont slab, as an Italian marble.

Surface marble, which of course is the only marble to be furnished from most new quarries, is apt to be imperfect, abounding in seams, or natural divisions, and also may have been broken by violence. The earlier workmen used to blast with powder, and this was enough, perhaps, to ruin all the marble in intimate connection with the blast. The presence of iron is also injurious. By the action of the air it is made soluble, and the rains dissolve it. It is then seen on the surface, highly disfiguring its beauty.

We would here insert an extract from a recent paper on this important subject, by Mr. Stephen P. Leeds, a professed geologist, residing in Brooklyn:

"Having had occasion, during the past year, to visit many of the marble districts of New-York and of the New-England States, I would beg leave to call your attention to that portion of the mineral wealth of our country comprised in this valuable material for building and ornamental purposes; and I do so the more cheerfully at this particular time, for the marbles of this country are destined, at no distant day, to form a highly important feature in its vast resources; for among the many mining interests that are now manifesting themselves, that of marble can not fail to hold a high rank, not only on account of its real, practical utility, but because judicious investments in this branch of operative labor are certain to produce large returns for the capital employed.

A violent prejudice has long been held by dealers and workers in marble against the marbles of America, and that, too, without stopping to examine into the reasons upon which these prejudices existed, to see if they really were possessed of a moderately fair foundation. They have maintained that American marbles were not sufficiently solid—they were full of flaws and shakes—the texture was not uniform, being sometimes in the same block full of soft spots, intermixed with nodules of almost flint-like hardness—that the color was not equal throughout the same mass, and that the general quantity was not susceptible of a high lustrous polish, or possessed of that compact composition which would allow it to be worked well under the tools of the manufacturer—evils which it was asserted did not appertain to the imported

article. And they were right, but only so far as their observation extended. *All marbles of American quarrying have been, as yet, but surface specimens.* Throughout all the quarries that I have visited, I have not seen any where the excavation exceeded seventy-five to one hundred feet in depth; and it is from samples usually taken from the immediate surface that their examinations have been conducted and their inductions drawn; from samples where the action of atmospheric and other influences tending to decomposition, have for long ages been in full operation, acting to the deterioration of the stone, while the finer marbles that are imported from Europe are taken from quarries that have been worked for many years, and are taken from a great depth below the surface.

The extensive operations that are now taking place in the lime-stone districts of our country, are destined soon to show that these objections to American marbles are to be fully removed; instead of surface specimens, we shall have blocks from several hundred feet below the surface, compact, clear, and susceptible of the most exquisite and elaborate finish, and embracing every variety of style, from the plain block and unclouded white, to the delicately-veined and richly-shaded tint, so profuse of beauty, and so fully adapted to adorn the halls of luxury and elegance. Then the rare beauty of the marbles of Italy, Spain, and Portugal, hitherto unequalled, will meet in this country with a successful rival in the products of the great basin lying between the bold and rugged Adirondack Mountains on the west, and the high sweep of the Green Mountains of Vermont on the east, crossing that rich and fertile valley in which Lake Champlain reposes; extending north to the confines of Canada, and south, with some interruptions, through the western part of Massachusetts and Connecticut, and the eastern part of New-York, to the shores of Long-Island Sound.

Here, in this widely-extended tract, a new source of national wealth, heretofore inert and dormant, will ere long be called into active existence; for men of capital and enterprise, with that far-seeing faculty which characterizes the shrewd and successful operator, have investigated the whole of the lime-bearing district, and have secured, as the field of their future operations, the most choice and desirable points situated within its limits, thus adding not only to the prosperity of the country, but creating a new demand for labor.

The Vermont quarries are worked to the extent of between two and three millions of dollars per annum; the New-York quarries afford nearly two millions of dollars a year; and the Massachusetts and Connecticut quarries together yield nearly the latter amount, forming an aggregate of seven millions of dollars per annum for the four States, and this, too, under circumstances far from propitious for the full development of the marble sections to the utmost of their capacity; and such is the demand for marble for building and other purposes, that were the yield four times the above amount, it would not overstock the market, in fact the demand is almost unlimited.

Nor is the marble the only source of profit from these quarries, the chips of marble broken from the masses in quarrying and trimming the blocks, are used for burning into lime, and the quality of the lime thus formed is unsurpassed. To afford some idea of the quantity of chips thus used, "the lime made in this manner in Duchess county in this State amounts to over two millions of bushels per annum."—*Mather's Geology of New-York, p.* 411.

The value of a lime-stone deposit may be better shown in figures, and I would quote again from Prof. Mather: "Each cubic yard of rock will make four barrels of lime, including the necessary waste. This would give about 135,000 barrels to the acre. * * * * If we allow a profit of only 25

cents per barrel, an acre of this lime-stone, 21 feet thick, is capable of yielding a clear profit of $33,880."

As a building material, marble has ever been considered the first in durability and elegance; poets have sung its praises, and orators have descanted upon its charms; it has been used in the erection of national buildings, and worked into monuments to perpetuate the fame of heroes, statesmen, and men of eminence. Temples, consecrated to the holiest sensations of the human mind, and dedicated to the highest attributes of art; embodiments of the true proportions of the faultless, pictures of beauty and loveliness, wrought in solid and massive masonry—these have arisen from the marble quarries of ancient and modern times; and with the wide field before us still to be explored, promising, as it does, such rich and ample returns for investigation, we can not doubt that the time is near at hand when the marbles of this country shall claim and maintain their proud preëminence over those of all other portions of the world."

Marble occurs in almost all parts of this country, and many quarries have been opened. We have already seen to what extent some of them are wrought.

In Maine, a quarry has been wrought for many years, in connection with the Thomaston lime-stone.

In Western Massachusetts, they have been opened for many years. In West-Stockbridge most of the marble is white. Of this, in 1839, two hundred thousand dollars worth was sold. In North-Adams it occurs "of snowy whiteness," and free from magnesia. The Sheffield quarries produced the marble from which the pillars of Girard College were wrought. Great Barrington furnishes a very beautiful clouded marble, but it contains 40 per cent of magnesia. Lee produces handsome marble.

In Vermont, white marbles are found through almost the entire range of mountains from Bennington to Vergennes, and it is found also and quarried in various places through the entire northern section of the State. The finest grained marbles we have ever seen, we selected from a quarry in Middlebury. Mr. Crawford has pronounced these marbles equal to the finest Carrara. More recently we learn that some very fine grained marbles are found in West-Rutland. At Plymouth, Windsor county, is a very elegant fawn-colored marble, and also mottled varieties, which are perfectly beautiful. But they are very hard and brittle, and therefore wrought with difficulty, and hence they have been neglected for the white, which is more profitable. Rutland has for many years sent immense quantities of white marbles to market. A quarry in Danby produces a flexible white marble, of most excellent quality. A slab freshly quarried, of the ordinary size for grave-stones, when supported by its ends, will bend at its centre to the extent of an inch or two. It soon loses this feature on exposure to the air.

There is also a rock which has been quarried in Cavendish, near Proctorsville, Vt., and which is found also in Lowell and in Troy, Orleans county, and also in some parts of Orange county, Vt., which goes by the name of VERD ANTIQUE MARBLE. This is a misnomer. It is not properly marble, but is quite a different thing. It is serpentine, mingled, perhaps, with some lime-stone and with certain metallic oxides, which give it a veined or mottled appearance, unlike the true green of the pure or "precious" serpentine. Our own city fathers, we believe, are discussing its merits as a marble, and a specimen on exhibition is described by its owners as "destitute of some of the imperfections of ordinary marbles." It is a beautiful rock, well adapted for handsome fire-frames, tables, etc. It receives a high polish, and has an unctuous touch.

It is also a beautiful material for pillars and pilasters, and all inside ornaments. It is quite as competent to endure violence as most marbles. But we should as soon think of covering our houses with landscape paintings, as to use this material for the walls of a building.

Serpentine is a magnesian rock. Common serpentine, according to Comstock, is composed as follows: Magnesia 44, silex 44, alumina 2, oxide of iron 7.3. The presence of magnesia in any rock is not favorable to its durability, particularly where it is exposed to the changes of weather. No difficulty is found, however, in the use of such rocks inside of buildings. We know of fire-places built entirely of this "verd antique," which have stood many years, and are still as good as new.

Isle la Motte, in Lake Champlain, contains a very extensive quarry of black marble; very fine white marble also occurs. The lime-stones of this island abound in fossils, in which the ammonite, and a species of bivalve, are most common.

New-York is abundantly supplied with marble. In Westchester county, it is so abundant that it is used for walls. A few miles from Lake Champlain, in Chazy, is a quarry called "Stoughton's Quarry," the marble of which abounds in fossil encrinites and corals, and other sea-shells. It is a "grayish mosaic," mottled with the red of the coral. A specimen of this on exhibition at the Crystal Palace, obtained the silver medal. The Onondaga lime-stone forms an elegant marble, abounding in organic remains. A large part of the rock is frequently made up of fragments of crinoidea and corals.

In Pennsylvania is a marble of a reddish color, beautifully variegated. It is in Somerset county, near the Youghigheny River, and is on the line of the Collinsville Railroad. The vein is from 22 to 32 feet thick, and covers some 950 acres.

Indiana produces good marble, which is referred, geologically, to the Silurian period. It occurs above the blue lime-stone formation. The Marble-Hill quarry is one of these. Many feet below the place here indicated, is found a shell-marble bed, 20 feet in thickness, and of rare fineness.

Illinois.—The geological survey, under charge of Dr. Norwood, brought to light several sources of wealth and luxury not before known to exist; among others, several deposits of marble of different colors, and suited to different uses. Among these is a variegated variety, suitable for any description of in-door and ornamental work, as mantels, table-tops, etc. It is from Southern Illinois, and will compare favorably with most of the imported marbles used for such purposes. It resembles most nearly some varieties of Egyptian marble. Handsome black marble is also found in Southern Illinois. A light-colored marble, nearly white, is dug from the vicinity of Thebes. A single building in Chicago is of stone from this quarry. An oolitic marble is also found in Hardin county. Another quarry is found near St. Genevieve. Polk county produces a conglomerate marble, said to be very beautiful. It resembles the Potomac marble.

Wisconsin produces marble of great excellence. The prevailing color is light pink, traversed by veins of deep red; also blue and dove-colored, beautifully veined. Fragments of pure white marble have been found on the surface, but their place in beds has not been discovered. This occurs near the line of Michigan, and near the Minominee River.

The region around Lake Superior produces marbles in abundance. The "Lake Superior marble" is a pinkish-lilac, on dark and light strata, with dark and light-colored flakes, occasioned by fossil-shells. It also exhibits dark purple veins, forming delicate but distinct lines.

The quarries of Messrs. Burt & Ely, four miles from Marquette, contain a marble veined with all shades, but generally a rich rose-color, said to equal the best Egyptian.

On the Galena River, at Tuttle & McLeer's Mills, occurs a blue fossiliferous lime-stone.

The elegant Potomac marble is widely known as beautifully variegated.

Marble also occurs in the States of South-Carolina, Tennessee, and Texas. But we have no information of particular localities.

We do not, of course, profess to give a catalogue of all or even all the most valuable quarries, though we should be happy to receive and publish descriptions of such, wherever they occur. We wish to draw attention to the subject, and excite the owners of quarries to give them more publicity, and perhaps to induce others to open these mines of wealth, and at least ascertain whether the business of quarrying them might not be found profitable.

INTERESTING AGRICULTURAL STATISTICS.

THE Washington correspondent of the *Baltimore Sun* gives the following interesting statistics:

The Agricultural Bureau of the Patent Office, of which D. Jay Browne, Esq., is the chief, received this morning from the hands of the binder, a few copies of the "Letter of the Commissioner of Patents, communicating the agricultural portion of the report of that office for the year 1853." Published in a condensed and convenient form, here is brought to view the results of various experiments by many of our most scientific and practical tillers of the soil from every part of our wide-spread country.

These papers treat of domestic animals, fertilizers, improvement of land, bread crops, textile and forage crops, miscellaneous crops, fruits, wine, etc., and climatology. They embrace numerous important tables, exhibiting the quantities, valuations, etc.; beside which, the work is embellished with several beautiful and truthful plates of the strawberry, corn, etc., and other products. Time will only permit me to say now that this work, which has involved an immense amount of care and labor for several months, is thus produced in a manner which must command not only the approval but the admiration of a large portion of our countrymen.

This work says that, according to the census returns of 1840, there were in the United States 4,335,669 horses and mules; of 1850, there were 4,336,719 horses and 559,331 asses and mules, (in the aggregate, 4,896,050.) The present number, including those of cities, may be safely estimated at 5,000,000, which, at $60 each, would be worth $300,000,000. Then, on the subject of bread-crops, the census of 1840 gives the wheat-crop of the United States at 84,823,272 bushels; in 1850, at 100,485,944; showing an increase of 15,662,672 bushels. The entire crop of 1853 may be safely estimated at 110,000,000 bushels, and valued at $100,000,000.

Next the cotton. The census returns of 1840 state the amount of this article cultivated in the Union to have been 790,479,295 pounds; of 1850, 987,637,200 pounds, an increase of 197,157,925 pounds. The amount of the cotton-crop of 1853 is estimated at 1,000,000,000 pounds, which, at 7 cents, would be worth $70,000,000.

The article on hops says that the price of hops during forty-eight years has never gone below 5 cents per pound—the actual cost of growing. Of what other agricultural product can the same be said that is grown in New-England? Then, this very year, and at the time of writing this report, hops readily bring 45 cents per pound, giving the enormous profit of $450 per acre.

Of the apple, the writer is not only interesting, but furnishes many amusing reminiscences. Amongst others, he says "a codling-tree, sent from England about a century ago by Charles, Lord Baltimore to his son, Benedict Calvert, is now standing in full vigor at Mount-Airey, Prince George's county, Md." In 1820–'21, the number of barrels exported was 68,643, valued at $39,966. In 1852–'53, 45,075—value $107,283, and in vinegar $20,445. Every description of fruit is noticed in order, and with eminent ability.

Tobacco is also fully noticed. The census of 1840 gives the amount raised at 219,163,319 pounds. Of 1850, 199,752,655, showing a decrease of 19,410,664 pounds. The crop of 1853 may be set down at 199,000,000 pounds, which, at 10 cents per pound, would be worth $1,990,000. With these few extracts I must leave the work for the present.

STATISTICS OF SONOMA.

From the returns made for 1854, by the county assessor, we glean the following interesting statement of the amount of stock, grain, etc., in this county:

Sonoma Township.—302 oxen, 1565 cows, 883 calves, 436 horses, 165 colts, 1262 hogs, 3095 pigs, 2570 sheep, 1053 lambs, 43 beeves, 3100 acres wheat, 1381 do. barley, 73 do. oats, 190 do. corn, 5 do. rye, 62 do. potatoes, 355 tons grapes. Militia, 209.

Vallejo Township.—248 oxen, 415 cows, 355 calves, 144 horses, 16 colts, 750 hogs, 2000 pigs, 18 sheep and lambs, 213 beeves, 540 acres wheat, 156 do. barley, 31 do. oats, 13 do. corn, 112 do. potatoes. Militia, 77.

Petaluma Township.—455 oxen, 571 cows, 255 calves, 390 horses and 75 colts, 659 hogs and 1394 pigs, — sheep, 24 beeves, 879 acres wheat, 555 do. barley, 174 do. oats, 107 do. corn, 652 do. potatoes. Militia, 162.

Santa Rosa Township.—755 oxen, 1444 cows and 786 calves, 659 horses and 176 colts, 3415 hogs and 4514 pigs, 48 sheep and 20 lambs, 189 beeves, 2072 acres wheat, 547 do. barley, 114 do. oats, 86 do. corn, 43 do. potatoes. Militia, 157.

Russian River Township.—125 oxen, 528 cows and 222 calves, 202 horses and 108 colts, 1255 hogs and 1449 pigs, 30 sheep and 23 lambs, 4 beeves, 1120 acres wheat, 287 do. barley, 14 do. oats, 238 do. corn. Militia, 94.

Bodega Township.—511 cows and 460 calves, 81 oxen, 95 horses and 55 colts, 513 hogs and 745 pigs, 150 sheep and 110 lambs, 148 acres wheat, 130 do. barley, 160 do. oats, 7 do. corn, 735 do. potatoes. Militia, 55.

Annally Township.—1069 cows and 449 calves, 448 oxen, 442 horses and 54 colts, 2606 hogs and 1480 pigs, 200 sheep, 1182 acres wheat, 532 do. barley, 497 do oats, 136 do. corn, 10 do. rye, 1001 do. potatoes. Militia, 169.

RECAPITULATION.

Oxen,	2,412
Cows and calves,	9,804
Horses, mares, and colts,	3,017
Hogs and pigs,	25,137
Sheep,	922
Beeves,	493
Acres of wheat,	9,041
" barley,	3,558
" oats,	1,063
" corn,	777
" rye,	15
" potatoes,	2,605
Grapes, tons,	355
Militia, number of,	1,023

The following are the statistics for Mendocino township, (Mendocino county—yet unorganized, and attached to Sonoma county for judicial purposes:)

274 cows and 75 calves, 210 oxen, 241 horses and 67 colts, 2052 hogs and 1128 pigs, 146 sheep, 751 acres wheat, 46 do. barley, 87 do. oats, 381 do. corn, 40 do. potatoes. Militia, 80.—*Sonoma Bulletin.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FOREST-TREES: SPECIMENS OF NATURAL HISTORY.

MESSRS. EDITORS: In an article from the *Ohio Cultivator*, on raising forest-trees from seed, the writer states that a deep, sandy soil is requisite for the successful growth of the chestnut, and it is vain to attempt to make it thrive on soils of an opposite character, as we know from repeated experiments.

Thus writes the Ohio correspondent. Chestnut thrives here, in Nichols, N. Y., and vicinity, on a soil of rather a loamy and clay and very stony, a large amount being on very high hills, where the soil is a kind of loam, with hard-spar, frequently with two feet and some places one foot; frequently on high hills the timber is over three feet in diameter; also the rock on the high hills is often found within six feet of the top of the ground. The rock in this vicinity is the Ithaca and Chemung group, and underlies the southern tier of counties of New-York, and a large part of Pennsylvania, with a considerable portion of Ohio and of other States. The chestnut thrives well here on the low river-flats, where the soil is alluvial. In relation to the butternut and walnut, they do well in this region, on a low, gravelly, sandy soil, and frequently on stony and clay loam, generally found here along the banks of rivers and creeks. There is but little lime in the soil here. From two specimens that were analyzed from Chemung county, by Prof. Emmons, the soil yielded from one and a half to one and three fourths per cent of lime. In the diluvial portion of this vicinity are often found a number of lime-pebbles and bolders from the northern lime formations.

The sugar-maple is found here growing on the highest and lowest land in this vicinity, and frequently on the high hills of large size with hemlock. The different species of hickory and white-oak, chestnut-oak, or rock-oak, black-oak, and red-oak, all grow here on hill and valley, in great abundance, and of a large size.

In relation to planting seeds of forest-trees, I have no doubt but that it can be done often with much advantage. In this vicinity, and most probably in many others, a large amount of young trees of various kinds can be got for transplanting.

In relation to the article in the July number of *The Plough, the Loom, and the Anvil*, I agree with the writer, that every person should make more or less collections in natural history. It is singular to notice how little this science is understood by the mass of the people. This ought not so to be. People should understand, or try to understand, the works of nature that are constantly before them. I have within a few years, while engaged in my farming and lumbering operations, made quite a large collection of minerals and fossils, and am now-a-days making a collection of fish and reptiles for the Smithsonian Institute, and also another collection of fish for Professor Agassiz's great work on the fish of the Union. It can all be done without a great amount of trouble.

ROBERT HOWELL.

Nichols, Tioga County, N. Y.

KEEP YOUR CATTLE WELL FED.

THE feed in our pastures is worth now, comparatively, but very little. Hence those animals that rely on this source for their food must suffer inconvenience.

It is important not to compel our stock to use up the rich deposits of fat or flesh, etc., during this season of short supply. The effect of such a course will last through the winter.

It is well known that if a sheep is half starved for only a few days, the growth of wool during that time will be of diminished value. The fibre will be of inferior quality. So that there is loss both of quantity and quality. We have no doubt that similar results follow the negligent treatment of cattle. When a man is sick, and thus prevented from eating, how rapidly sometimes does he waste away. It is very certain that other species of animals are alike affected by only a temporary want of food. Wild animals we know accumulate, during the warm months, that which supports them in their confined quarters during the frosts of winter. Let us not fail to profit by these hints. Winter is a severe season, in our northern climate, both for man and beast.

Fat-producing food is more important in winter than in summer, for the reason already suggested. Hence the oil-cakes, so much used in England, and there considered indispensable, or some convenient substitute, should be fed to our cattle during the cold season. Potatoes are a substitute, but the crop is too small to admit of such use. Different sections of the country have their own crops, which are adapted to the use of cattle. Cotton-seed, even after the oil has been expressed, in a good degree, is a fair substitute for the oil-cake.

CURIOSITIES OF THE BRITISH CENSUS.

We find in the *New-York Times* an abstract of the British census, which is well worth the notice of our readers. The following paragraphs contain its substantial parts:

When the first regular census of Great Britain was taken, in 1801, the resident population of England and Wales was not quite nine millions; at the last reckoning, in 1851, it was almost eighteen millions—that is, the numbers had doubled in half a century.

In Scotland, half a century since, the resident population was 1,608,000; in 1851, it was 2,883,000. In Ireland, on the contrary, the population is less now than it was in 1821, in 1831, and in 1841; in that last year it was 8,175,124; in 1851, it was only 6,553,178, and has much decreased since then by emigration and eviction.

The population may thus be generalized, as taken in March, 1851:

England and Wales, - - - - -	17,927,609
Scotland, - - - - - - - -	2,888,743
Islands in British Seas, - - - - -	143,126
Ireland, - - - - - - - -	6,553,178
Total, - - - - -	27,712,656

The British census return for 1851 shows some curious data as to the occupations of the people of Great Britain. There are 524 authors, 1320 editors, 207 reporters and short-hand writers, 8433 booksellers, (also described as publishers,) 11,029 bookbinders, and 26,024 printers. There is no distinctive mention of compositors. There are only 10,255 merchants. Of shoe-blacks there are only 5. Commercial travellers, 9409, being less than in 1841. Of actors and actresses, 2641, and 82 equestrians; advocates, barristers, special pleaders, conveyancers, 3111; but of attorneys there are 13,256. On the other hand there are 17,621 clergymen of the Established Church, 1556 Baptist ministers, 1972 Independent, 2725 Presbyterian, 14 Unitarian, (this evidently is too small a number,) 1798 Wesleyan, 1580 of other Protestant denominations, 1093 Roman Catholic, and 73 Jewish priests, and 973 Scripture readers, missionaries, and itinerant preachers.

Against the law and divinity, there are 2328 physicians, 15,163 surgeons and apothecaries; 15,643 druggists and chemists, 146 drug-merchants and brokers, and 88 leech-bleeders, breeders, and dealers. There are, among artists, 5444 painters and 666 sculptors. Of the juveniles, 55,020 were under tuition at home, and 2,697,717 at school. There were 65,376 schoolmasters and mistresses, which includes ushers; 176 drawing-masters and teachers. There were 13,865 pastry-cooks and confectioners. As many as 20,242 are returned as "dependent on relatives." There were 46,661 publicans and beer-venders, 40,241 soldiers, 4516 officers, 1735 half-pay officers, 89,206 merchant-seamen, and 6763 in the Royal Navy, with 23,907 Chelsea and 7976 Greenwich pensioners.

It is impossible, they are scattered under so many heads, to arrive at the numerical strength of the manufacturing interest. The agricultural is plainly put thus: Farmers, 303,720; graziers, 3,047; son, daughter, grandson, grand-daughter, brother, sister, nephew, niece of farmers or graziers, 275,170;

farmers' and graziers' wives, 201,736; indoor farm-servants, 364,194; farm-bailiffs, 12,805; out-door agricultural laborers, 1,077,627. The total of persons directly engaged in agriculture, with the addition of 34,627 landed proprietors, would be 2,272,826, or about a ninth of the whole population of Great Britain. The Parliamentary orations of the Protectionists have strongly declared that it was a much greater proportion; but the figures of arithmetic play the mischief with figures of rhetoric.

The increase of population in London since 1801 has been curiously rapid. In that year it was 958,863: the return for 1851 shows it as 2,362,236. From 110, (half a century ago,) Birkenhead (the Brooklyn of Liverpool) has sprung up to 24,000; Liverpool itself from 82,295 to 375,955; and Manchester from 94,876 to 401,321. Even Bristol, which has only recently awakened from a heavy commercial lethargy, has double the population she possessed half a century ago. The greatest increase in any place has been at Glasgow—from 77,000 in 1801 to 329,000 in 1851.

Two other points remain to be mentioned as curious: First, the continued excess of females over males, as shown by each of the five census-takers of the last half-century—while, on the other hand, there are born more male than female children. Secondly, the remarkable fact that while in England, Wales, Scotland, and the Islands in the British seas, the population of towns was 10,556,288, the population of villages and detached dwellings of the country was 10,403,189. The difference in numbers is so small that the return may be taken as giving what is called "six of one, and half a dozen of the other."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE MISSISSIPPI PLANTER.

MESSRS. EDITORS: I shall in this letter endeavor to give you a sketch, though an imperfect one, of the Mississippi Planter, and may allude to another profession.

The notion is held and even encouraged by many between this and the Canada line, that our planter, nabob-like, either spends his time braced up in his arm-chair, in utter listlessness, having his wants attended to by a nod from the hands of some obsequious slave, or in visiting his neighbor to chat over the gossip of the day. Or, if possibly he may have some under-range of thought, he is trying to figure in politics. As for agricultural interests, they are too burdensome for his imbecile nature. All these matters are left to an overseer; and so long as he can make the cotton-bales count at the expiration of the year, it is immaterial how much suffering man and beast have endured.

Fancy now a character the reverse of this, and you will then much nearer approximate toward the truth. One who greets with pleasure the sharp north-wester, with its bracing influence, that is to give him additional energy for his business; who, forsaking his pillow at an early hour, witnesses the "ruby tint of morn," that heralds the approach of the god of day whose warming rays in spring and early summer he delights to bask in; for then he knows that the same cause that will bathe his brow in sweat, will give increased vigor to his growing crop. It is immaterial whether he has an

overseer or not. He feels that his planting affairs have a claim on him, and in responding to them by his personal attention, he is acting within the sphere of one of his greatest pleasures. To carry out his plans he has to hold daily counsel with himself or manager, in determining the time for certain kinds of work, and the best way of doing it. Neither is he regardless of his stock, for well does he know that on his oxen, but especially his mules and horses, depend much of his future success. Not only does he assist in planning, but is cognizant of those plans being carried out, by witnessing their application.

The agriculturist of this region that does not exercise his powers of mind and body, and does not bring his plans into a well-digested form, will find himself behind the majority of his neighbors. He needs to have an estimate of his work at least a month ahead. And, to be safe so that all ends shall be well dove-tailed together, when the cultivation of his crop comes on, he has to make a calculation of the time, in the commencement of the season, it will require to do his indispensable work—such as preparing his land for the plough, ploughing, fencing, etc. This should be done by the 1st of April, allowing 20 per cent for time that the plough should not be run on account of the wetness of the ground, and 10 per cent for bad weather. The balance then can be directed to clearing land, ditching, and other improvements. When seed-time arrives, his time and mind are occupied by the inquiry, How he shall plant to the best advantage, to insure a good stand and not crowd one portion in the way of another, that when it may be ready for tillage he may be prepared to give it? Should he neglect either of the above, in all probability, and especially if he has fifteen or twenty acres to the hand, he will find himself, to his sorrow, in a condition by the middle of June, that may tell woefully when harvest-time comes. Does he expect when the seed is in the ground that his holiday has commenced? Far from it. From the great amount of tillage, in connection with the rapid growth of weeds and grass, he has little time for idleness, especially if May proves wet. The cotton-plant in its infancy is one of the most delicate, showing hardly any progress before the 1st of June, while the grass is striding onward, like Jacky's bean, to overwhelm it. If we had only our cotton to protect and foster at this time, we might feel ourselves more our own masters; but our corn equally, if not more so, demands our help. One false step, or little neglect, may make us, let us do what we may hereafter, corn-buyers, which is never a feather in the planter's cap. We recognize in it, if the season has not been too wet, an evidence either of bad management or slothfulness, if we are found much in the grass. We have an innate pride, independent of the pecuniary advantage, in having a good crop, and of course are pleased if we secure something better than our neighbors; and this satisfaction is further enhanced if we can demonstrate that it has been accomplished with less work than theirs, for this would furnish very strong proof of superior husbandry. Then, beside our *interests* involved, there is a spirit of rivalry set up, of mind against mind, and physical force against physical force. Can such a state of things exist without the development of mental and physical energy? It is impossible. No two consecutive years will admit of the same kind of management. As the seasons are variable, so have we to vary the application of our work. Many think that the agriculturist's life is like that of a horse in a bark-mill, round and round, with very "little variation or shadow of turning." What a mistake! Every step must be guided by thought. Should he establish a system, and say, By this I will be guided, what in all probability would be the consequence? In a few years he would

find himself behind the value of his capital. As the physician and political economist have to be governed by circumstances, so has the planter. I think one of the principal causes of the jarring among political economists, is that they establish systems independent of transpiring events. Whatever would be the true policy of a prosperous nation at one time, the opposite would be requisite at another.

Few of us have had an opportunity of acquiring that kind of knowledge from books that constitutes the scientific agriculturist. But from having the book of nature constantly before us, and reflecting that light we call experience, we are thus enabled, although ignorant of the causation of things, to apply our efforts to that way that will secure profitable crops in return for our labor. We all plead guilty to that pernicious system, established in all new countries, of exhausting our soils, and, when shorn of their riches, of submitting other portions to the same process. The force of habit is frequently more dominant than nature, and the power of the multitude in constraining our judgment is equally strong. Can it then be expected that we can immediately divest ourselves of these baneful influences? I think not. Experience yearly tells us we should change this policy. And this we are doing, though slowly; but to counteract this course, we have a great abundance of fertile and cheap land, that is still a stranger to the dominion of the plough. Yours, etc., H. W. STACKHOUSE.

Hinds Co., Miss., August, 1854.

DRYING FRUIT.

IT has been observed that the amount of peaches consumed in a single week in the city of New-York, exceeds the total consumption of fruit in Great Britain throughout the entire year. The sales of perishable fruits are rapidly increasing throughout the country; but there is one serious drawback to their extensive cultivation; that is, the necessity of crowding them into market at the critical period of their maturity, so that twenty-four hours' delay shall not witness their destruction by decay and fermentation, and result in their total loss. Hence the immense superiority, in this particular, of long-keeping sorts, which may be deliberately secured and held in market for many months, till the best time shall be selected for their disposal.

But there is another important avenue to market for the perishable fruits that is at present almost unknown in its perfected form. We allude to *preservation by drying*. Every farmer *thinks* he has seen dried apples and peaches, *but not one in a thousand has seen them*—properly so called. That which usually appears under this name, consists, in the first place, of a selection of such inferior, poor-flavored fruit, as can be used for nothing else; this is imperfectly pared, leaving a due proportion of skin and core remaining, and is then variously subjected to partial decay, smoking, drying, etc., forming when completed a singular medley of all colors from brown to nearly black, and with nearly as various an intermixture of flavors. Those who wish to see dried fruit in perfection, must remember that a poor-flavored sort before drying, can never by any ingenious process become finely flavored afterward. The very finest varieties must therefore be first chosen. The process of drying must then be so rapid that no decay nor even discoloration shall take place until the operation is completed. Our climate is too precarious to

think of drying fruit properly in the open air, even for the earliest varieties. Some artificial arrangement for the purpose must therefore be devised.

The great leading defect of all the plans we have seen for drying by fire-heat, is *a want of circulation in the heated air*—a deficiency in rapid ventilation. A high temperature is given by means of stoves to a close apartment, the air of which in a few minutes is heavily charged with moisture from the fresh fruit, and a sort of steaming, stewing, half-baking process then commences, producing, after a long delay, an article far different from that of a perfectly dried, finely-flavored fruit. A free circulation of air, kept dry by a continued fresh supply, would accomplish the work in far less time, and at a much lower temperature; and consequently retain, in an incomparably more perfect manner, the original characteristics and color of the fruit.

In order to make a beginning in this matter, and to assist in the erection of good, cheap, rapidly-operating, and perfect fruit-drying establishments, we present to our readers a description of an apparatus for this purpose, which, although never patented, we believe to be far more valuable than many machines not thus thrown open to the public. Its peculiar advantages will be obvious as soon as the description is examined.

It consists of a tall upright shaft, through which passes an endless chain, made of a number of strong frames, securely hinged together at their corners. This chain should be strong enough to bear several hundred pounds without breaking. At every joint it is furnished with a braced shelf, each consisting simply of a square frame furnished with coarse twine-netting, like a sieve. This endless chain, with its series of sieves, runs over an angular wheel above and another below, precisely like those of a common chain-pump, but wide enough to receive the full breadth of the chain. Its motion is quite slow, descending on one side, and rising on the other, and is accurately regulated by means of a pendulum connected to the notched wheel by means of an escapement like that of a common clock, but made very strong. A strong and broad India-rubber band connects the axle of this wheel to the drum on which the chain runs. As the chain is loaded with the drying fruit, and is therefore quite heavy, it must not, and indeed can not be subjected to the successive vibrations of the clock-work—these vibrations being broken and destroyed by the India-rubber band.

The whole apparatus being ready for operation, heated air from a stove and drums is made to pass up through the shaft, being let in at the sides, and confined to this shaft by the drum being made light, and fitting closely without touching in its revolutions. A person with the freshly-cut and pared fruit, as each successive shift or sieve slowly descends, spreads a single layer over them. They operate like the weight of a clock in keeping up the motion of the pendulum; and the velocity of their descent is accurately regulated by means of the relative sizes of the wheels placed on the axles, and also, if necessary, by using different lengths for the pendulum-rod.

The great advantage of this contrivance is the following: The dry and freshly-heated air first enters the bottom of the shaft, and strikes the fruit when the drying process is nearly finished, and completes it; as this air rises, it receives additional portions of moisture from each successive shelf, until finally it passes off at the top, the driest portions being needed at the bottom to complete the process, and those most charged with vapor only coming in contact with the freshest fruit at the top, where only it could be useful.

The velocity must be so regulated, by experiment, (according to the height of the shaft, heat of the air, and time required for drying,) that the drying process shall be just completed by the time the fruit reaches the bottom,

where it drops off from the revolving shelves into baskets or boxes placed there for this purpose.

This apparatus may be placed in a tall narrow building erected for the purpose, and built cheaply by vertical boarding on a wooden frame, to the whole of which a handsome architectural exterior may be imparted by giving it the aspect of a square Italian tower or campanile.

An apparatus of this sort will dry fruit with great rapidity, certainly, and independently of the most unfavorable changes in the weather; and it will come out white, clean, and perfectly dried, retaining all the peculiar flavor of the fresh fruit, and prove incomparably superior to the common half-decayed, smoked, imperfect article. When known, such dried fruit must command almost any price in market. Drying establishments, well managed, would give a great impetus to peach-planting in this country; and we unhesitatingly predict a large trade in the finest dried peaches in European markets, to which they can be so cheaply and safely conveyed, and where, as fresh peaches can not be easily obtained, they can not fail to be very highly appreciated.—*Country Gentleman.*

[We should be glad to give the representation of this piece of machinery, and may be able to do so hereafter.—EDS. P., L., AND A.]

SOCIAL POSITION OF THE FARMER OR MECHANIC.

LARGE quantities of paper have been wasted by more than one class of the community, in trying to convince the public that they were very badly used. We could refer to repeated efforts made by those who, in reality, had nothing to complain of, to show that the respect which was in fact paid them, was less than they had a right to demand. We can even point out a large body of clergymen, who, a few years since, were foolish enough to assume such an attitude. School-teachers have done it repeatedly, and one of our own humble efforts, years ago, in a discourse before an association of teachers, was party directed to this subject. We endeavored to show the folly of such conduct. Parents look to teachers as necessary helps. They rely on them exclusively for giving to their children a certain position in society, which, without education, they can not retain. Hence they must regard them with especial favor. But it is not strange that they should be cautious and watchful of the *individual* to whom they intrust such important matters. Hence, while they honor teachers as a class, they are (or ought to be) strict in the examination of the candidate for the office of teacher, and until he has earned for himself a reputation for unsullied integrity in his professional duties, he ought to be watched narrowly.

We can not believe it possible that the people, in mass, can entertain a prejudict against any useful calling. Whence could such a feeling arise? What state of things can be imagined in which such feelings, if once excited by some casual occurrence, should grow into a settled habit?

Executioners, we know, are everywhere despised, and perhaps abhorred—but even this does not bring into disrepute the office of sheriff and marshal, although upon these officers are sometimes imposed the duty of hanging a man.

We have before taken occasion to show that the position of every class is determined by the average cultivation of the class, or by the degree of culture, mental and moral, ordinarily exhibited by it, or required for success in it.

Farmers and mechanics are not exceptions to this rule. They have had, and must have had, in the main, their proper place, as certainly as water attains its proper level. Nor is it true that other professions or pursuits of similar culture, stand higher than they do. We can refer to a case in illustration. We are acquainted with a town where, twenty years ago, the finest houses were occupied by merchants, lawyers, and educated men of leisure, who were always looked up to as at the top of the social ladder. They employed mechanics of various sorts, who, by prudent management, obtained a prosperous business, and acquired considerable estates. The lawyers and merchants died or otherwise disappeared, and by-and-by it came to pass that these same mechanics, artisans, etc., purchased an doccupiedthose same fine houses. What was the result? Those who knew them at an earlier period, and accurately measured their real worth, allowed them just the same degree of respect when they came to occupy a finer house. But with their increase of property, they were able and were disposed to give a good education to their children, far better than they themselves had, and while they continue to maintain the same reputation, the society of their children is valued and cultivated as were the children of the former occupants of those houses. We are confident that this is not a solitary instance. Many of our readers can, no doubt, point out just such a community, and more than one may imagine that he knows the original of this very description.

Let our readers of various callings practise according to these suggestions, and thus test their propriety. We know that individuals, from some accidental occurrence, or some physical imperfection, or otherwise, may be subject to unjust prejudice, among a small circle of associates, and sometimes injustice on a wider scale is witnessed. But these cases are exceptions, and can not occur in relation to masses.

A host of facts bear us out in these opinions. Who is more honored than the mechanical inventors of the last generation? Whose fame is greater or wider than that of Arkwright, Fulton, Watt, etc.? Who is more widely known and more highly honored than Mr. Bigelow, the inventor of the Power-Loom, and of other useful machinery? Who receives more notice abroad than he is now receiving? On the other hand, who are more insig-insignificant than a swarm of the pettifogging lawyers which abound in every large city? Some of these are perhaps unjustly doomed, for they are often looked upon as little better than the criminals which people our jails.

Inert matter illustrates this subject. What is there more coveted than a splendid farm? Even the hired men of such an establishment are gazed upon as among those who are especially favored. But who covets a wild, uncultivated, barren swamp or sand-bank? An elegant carriage—asplendid steam-engine—or even a beautiful toy, will arrest the attention of a crowd. But who cares to look at a piece of bungling workmanship? And yet even this attracts notice, if it exhibits some new principle, or new application.

It is so with men. We may require their aid, but unless they show a degree of mental culture which deserves respect, and draws forth sympathy, they can not afford pleasure or give dignity to a society of educated men.

HORTICULTURAL.

The Paulownia Imperialis.—The Imperial Paulownia is one of the plants lately brought to Europe from Japan, by Dr. Von Sieboldt, the Belgian botanical traveller. In its native country its local name is *Kirri;* and the Chinese call it *Too-Hak-Too.* It forms a tree, in Japan, about thirty or forty feet high, with a trunk two or three feet in diameter. The bark is smooth and light-colored. The branches are rather few in number, spreading horizontally and forming a large head.

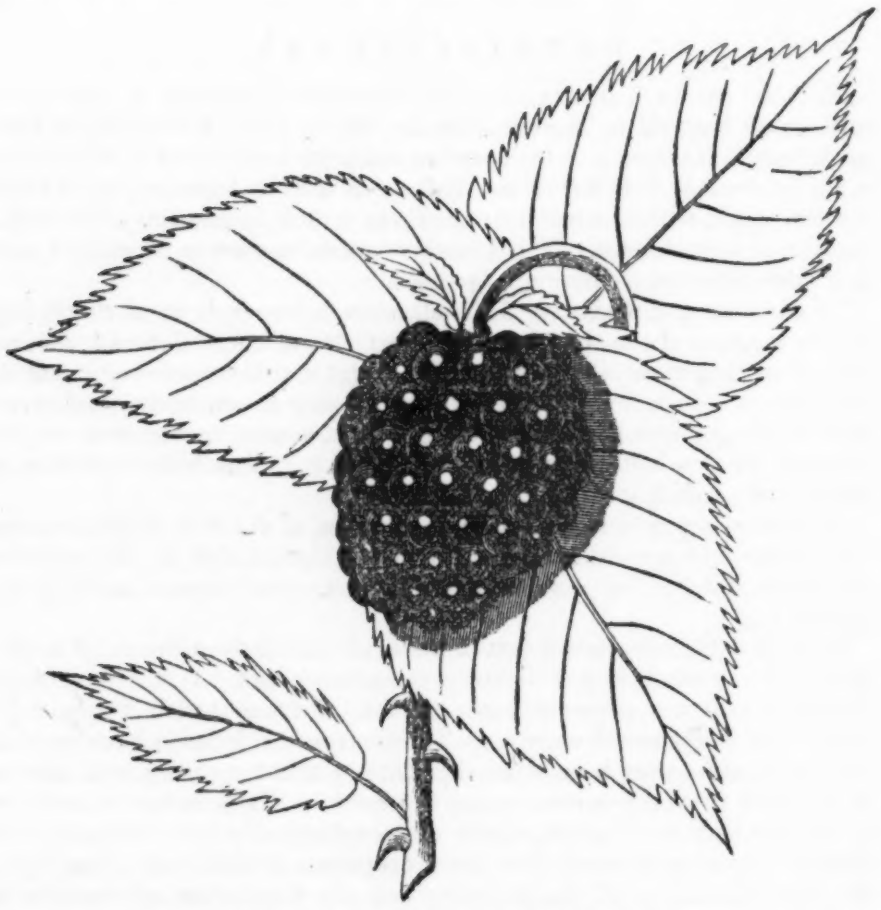
The striking peculiarity of the Paulownia, however, is its showy foliage. The leaves are of the shape of those of the Catalpa, but of darker green, perhaps resembling more closely those of a large sun-flower—being broad and heart-shaped. In rich soil the growth of the tree is extremely rapid, young plants making shoots of eight or ten feet in a season, and on such we have measured leaves a foot and a half in diameter. But on older trees they are usually about half that size.

The flowers are produced in April in panicles, at the ends of the branches. They resemble in general appearance those of the Catalpa, but the color is a pale, bluish-violet. The seeds are borne in an oval capsule as large as a pigeon's egg.

When the Paulownia was first introduced into the Garden of Plants at Paris, it was treated as a delicate green-house plant. It was soon found, however, that it was perfectly hardy on the Continent and in England. In this country it appears equally so. The trees in this latitude have stood the past two winters, even in exposed situations, without covering, and have not lost an inch of the previous season's growth. We therefore consider it a hardier tree than the Catalpa, which often suffers badly from the cold of this latitude. Nothing is easier than the propagation of this tree. Single buds will grow, like those of the mulberry and the vine, taken off early in the spring and covered about an inch deep in the soil of a fresh hot-bed. The cuttings of the young shoots, planted under a hand-glass in a shady border, strike root readily. But by far the easiest and most rapid mode is that of planting pieces of the roots.

Every little piece of the root of the Paulownia will, under certain conditions, produce a plant. It is only necessary to make a common hot-bed early in the spring, reduce the roots of the parent-tree, (and it will bear a very severe reduction,) and plant every piece that will make a cutting not smaller than a goose-quill, and a couple of inches long. Plant these bits of roots about an inch and a half deep in the rich, light soil of the hot-bed. In a fortnight's time every bit will throw up a bud, make new roots, and become a distinct plant. When the plants are about three inches high, they may be transplanted into rows, beds, borders, or, in short, wherever they are finally to grow. If the season is favorable, they will grow to the height of from three to six feet before the close of the autumn. Next year, if the soil is deep, they will make shoots eight or ten feet long.—*Downing.*

Railroad Consolidation.—The Cincinnati and Chicago, and the Cincinnati, Logansport, and Chicago Railroad Companies, have consolidated under the name of Cincinnati and Chicago Railroad Company, and C. P. Smith has been elected President.



LAWTON BLACKBERRY.

The reputation of this new luxury of the fruit-garden being now fully established, we present to our readers a representation of the fruit and leaf of medium size, taken from nature; it is the "standing or upright variety," and the first decided improvement ever discovered, and is no doubt an original seedling. The fruit, in size and shape, strongly resembles the Hovey seedling strawberry, and when fully ripe is perfectly delicious. We extract from the September number of the *Horticulturist* the following testimony in its favor, from Charles Downing, Esq., and no better need be furnished:

"Having heard a good deal about the Lawton or New-Rochelle blackberry for the past year or two, and knowing that many new fruits were overpraised, I made a special visit to Mr. Lawton's a few days since to see for myself, and can assure you I was well paid for my trouble. There is no humbug about it; and the only wonder is that it has not been more generally introduced and propagated before. The fruit is large and sweet. It is an enormous bearer; indeed, the quantity (considering the large size of the fruit) surprised me, and the berries were perfect. Mr. Lawton informed me they continue in bearing five or six weeks, and in favorable seasons much longer. He has some two or three acres, and will have plants to dispose of in the fall and spring; the latter, however, is the most preferable time for transplanting. Plant as early as the ground is in good working order."

Mr. Lawton's farm, (Wm. Lawton, Esq.,) is in the village of New-Rochelle,

and his garden and residence are within five minutes' walk of the depot. Visitors are at all times permitted access to his grounds, to inspect his plants. He is cultivating the fruit extensively for market, where it readily commands thirty-seven and a half cents a quart; and, in extending his plantation, all his plants are carefully examined at the fruiting season, to guard against the accidental introduction of any of the common varieties, or the deterioration whichis sure to take place under careless cultivation. Plants sent to purchasers will be those only raised upon his own grounds, fine, vigorous offshoots from bearing plants.

We find, by the directory, that Mr. Lawton has an office at No. 54 Wall street.

CHEAP CANDLES.

We find in an exchange the following recipe for making candles: To twelve pounds of lard use of alum and salt-petre each one pound; dissolve the alum and saltpetre in a small quantity of water, then pour into the melted lard, and boil the whole until the water evaporates. The mixture requires constant stirring to prevent settling in the bottom of the vessel. Candles made of this composition are equal to the best tallow, and last some time longer.

COFFEE AT MOCHA.

The coffee-plant grows sixteen or eighteen feet high, with an upright stem covered with a light-brown bark. Its branches grow horizontally and opposite, crossing each other, and form a pyramidical appearance. The leaves grow on the opposite side of the branches, to the length of four or five inches, and to half that width in the middle. The flowers growing in bunches at the junction of the leaves are white, maturing first into green, then red berries resembling bunches of cherries, each of which contains two kernels. But one crop is annually produced, which is gathered in the months of January and February. For the purpose of being dried in the sun, the gathered coffee is spread on the house-tops, or cleared spaces of ground, where it is frequently watered to open the koke, or shell, which is always separated by grinding before packing. The coffee raised at Annas and Sana, which is held in the best estimation, is generally dried upon temporary floors, covered with a *compost of clay and cow ordure, which protects the coffee from vermin, and also gives it a permanent yellowish color.* How perceptibly such a compost may affect the taste of the coffee, would doubtless be a matter of inquiry with the tidy, cow-loving Hindu housewife, who uses a solution of it to purify her parlors, ornament her walls and doorways, and for numerous other purposes.

Large quantities of coffee arrive at Mocha, from March to the latter part of July, from the coffee districts within twenty days' journey. Camels are employed in its transportation, each of which carries about six hundred pounds, contained in two sacks. They are driven in long trains of fifty or more, arranged one behind another, the head of each being tied to the tail of the

camel immediately before him. Thus arranged, but few drivers are necessary.

All coffee from the country is first taken to the custom-house, a large building one hundred and fifty feet square, near the sea-gate, where it is stored to be inspected by the Governor, who visits the custom-house daily. Here also the duties are fixed, at the rate of seven per cent on English and three per cent on American imports. A double duty is imposed on smuggled goods. From the custom-house the coffee is taken to the gow-downs, or warehouses of the merchants, several of which are attached to the walls of the custom-house and rented by the Government. There it undergoes the process of being cleared from pebbles and dirt by means of sieves. Those who do this tedious work of garbling, though expert in their calling, earn but the value of five or six cents daily, a portion of which earnings is paid to one of their number who acts as their overseer, and to whom the purchaser must complain, if he has any fault to find. An active man may garble two or three bales a day, and a smart woman half as much. Having been cleaned, the coffee is packed in bags for exportation, and, if good, should be free from white and black kernels and have an aromatic smell.

But few Arabs, and those the wealthier class, indulge, as a general habit, in the luxury of coffee. It has often been disputed whether coffee does not come under the prohibition of the Koran, which forbids the use of strong and inebriating liquor, as it is a well-known fact that the fumes of coffee have some effect on the imagination. Its use is, however, generally tolerated, and many Arabs say "a dish of coffee and a pipe of tobacco are a complete entertainment." They drink it without either milk or sugar, after it has been pounded fine in a mortar and then steeped. All classes use a very palatable beverage made from the koke, or coffee-shell, which goes by the name of *kawha*. It can be obtained at the numerous and much-frequented coffee-shops, where

"Well-seasoned bowls the gossips' spirits raise,"

for half a cent a quart.—*Notes on Mojung and Zanzibar.*

RAISING CORN FOR FODDER.

Different methods of cultivation have their several advocates. Every crop is treated by different methods by different farmers, and perhaps with equal success. Corn for fodder is sometimes sown in drills, and sometimes broadcast. We doubt whether either way has very decided advantages, though the former gives better opportunity for weeding. But the following method, which is new to us, commends itself as specially worthy of attention. The reference at the commencement of the extract refers to a late number of the *Cultivator:*

Messrs. Editors: I read your article on "Sowing Corn for Fodder," in the July *Cultivator*, with considerable interest, but I have a mode of raising it differing slightly from yours. It is this: Sow in drills one and a half feet apart, at the rate of about four bushels to the acre, and when just up sow on the rows plenty of plaster, (say three or four bushels to the acre.) When six or eight inches high, run through it with a small corn-plough or cultiva-

tor, made very narrow. Commence cutting to feed green, every alternate row, when about two or three feet high, and get over the field by the time the corn is four feet high, if possible; then turn and cut out rows two feet wide crosswise.

The advantage of this method is that, if the soil is rich, we will have left on the ground all that can stand up, and will have all that is cut up clear gain, which is several tons. I think an acre will produce nearly twice as much in this way as to have the rows three feet apart in the first place.

I wish some of your correspondents would weigh the product of an acre, and communicate the result to the public through the *Cultivator*. I believe it would astonish all who have not tried the experiment. I sowed mine this year on the 17th of May, and, from some experiments in cutting and weighing, I believe I have places in my field that would, if weighed now, (July 10th,) green, amount to near 60 tons to the acre. W.

Oswego, July 10, 1854.

SOUTHERN PROGRESS.

We are happy to learn that the farmers and planters of the border counties of Virginia and North-Carolina have associated themselves for the promotion of their common interests, and have established "The Union Agricultural Society of Virginia and North-Carolina." On the 4th of August last, an address was delivered at Petersburg by the President of the Society, James C. Bruce, Esq., of Halifax county, Va. Among many judicious things contained in extracts of his address, which we have met with, were the following, in which he gives the same views which we have given on that subject:

"The respectability of every profession is graduated by the amount of intellect which is made to bear on it. Agriculture is the calling of the masses, and to elevate it we must elevate the masses. General education, and a wide-spread popular enlightenment, is as much the basis of a prosperous agriculture as it is of a rational liberty; and, to improve the cultivation of our States the light of knowledge must first fall on the minds of their citizens. The principles of a scientific agriculture, or even of a wise practical tillage, can not be instilled into the minds of the ignorant. It may be safely said, then, that the reason why the agriculturist is a laggard in the race of improvement is, that his competitors have always had the advantage of more intellectual culture. There is abundant cause for this. The cultivators of the soil are scattered over a large surface; their employments are independent and solitary; they want the attrition of social intercourse, by which the mind is polished and sharpened and the intellect lighted up. The votaries of other trades and professions live in cities, are brought into daily contact, and have their colleges, their guilds, their trades-unions and associations. Union not only gives light and knowledge, but energy, confidence, and boldness."

We give also another paragraph, in which, as elsewhere, he shows himself fully competent to address a society of farmers:

"I am happy to see, from the published proceedings of our Society, that it is contemplated to hold a Fair in October next, for the exhibition of spe-

cimens of the production of our fields, our herds, and our flocks. Let it be remembered that our Society will derive neither honor nor shame from this exhibition, for it is too young to have incurred any responsibility. We can not in a moment call, by our fiat, order out of chaos or light out of darkness. All that we promise is, to show the condition of our agriculture at the commencement of our labors; to see what we have and what we have not. In order that this may be done, let every member bring up a specimen of his land. Let him present his firstlings; his sacrifice will be accepted. Let no one come up here in October empty-handed. Let him who pleads his poverty show a specimen of his poverty. If we show nothing else, let us show our wants. This is what our Society ought to know, it is what our Society ought to relieve, and for this purpose it was called into being. It is not a vain show that we desire to make; we want to see what we are now, that we may hereafter make comparisons, in order to know if our Society is doing good, and whether the country is prospering under its auspices. This is the object of the Society in holding its fair, and all must acknowledge that it is a good object and a useful one. While, gentlemen, our exhibition should be on a liberal scale, we should exercise at the same time a judicious economy of our means. We have, in my judgment, other objects, less striking, perhaps, but fully as important, which appeal to our liberality. I wish to see our Society take a wider range than any other which has preceded us. I want to see our experimental farm in operation; and I dream, too, of an agricultural school attached to it under the direction and management of our Society. Why not? There are schools of divinity, of law, and of medicine, and why should not a body of agriculturists like us have our school of agriculture? What is our organization worth if it does not bring forth some splendid effort of enterprise? An experimental farm, with an agricultural school attached to it, would leave us nothing more to ask for or to wish. We are now engaged in the task of laying the corner-stone of agriculture. Let its foundation be broad and deep. Let not our work be ephemeral, and let us not content ourselves with the exhibition of an amusing pageant. Let us not be servile copyists, but let us lead, let us boldly lay down a course for our Society that is useful, that will benefit ourselves, that will benefit our States, that will benefit the world."

PROPOSED PREMIUMS—MARYLAND SOCIETY.

THE Trustees of the Maryland Agricultural Society for the Eastern Shore, very liberally offer premiums for sundry experiments, as follows:

"Whereas, it is of primary importance to the producers of wheat and corn to ascertain definitively, if possible, the relative products of wheat when propagated in the various modes now in use; and also the relative effect of a ridged and level surface, as left by the wheat-crop upon the succeeding crops of grass and corn; and whereas, to accomplish this object fully and satisfactorily, it is deemed expedient to offer such premiums as will probably induce many to incur the trouble and cost of the necessary experiments; it is therefore

Resolved, That this Society will unite with the Maryland State Agricultural Society, and such County Societies as may be in existence in this State,

in offering a premium of $150, to be awarded in the autumn of 1855, for the best conducted experiments that shall exhibit the comparative results of propagating wheat—by drilling on a level surface—by drilling on a ridged surface, lengthwise the ridges—by sowing broadcast upon a level surface—and by sowing broadcast in ridges or narrow lands.

Resolved, That this Society will unite with the aforesaid societies in offering a premium of $150, to be awarded in December, 1857, for such continuation of observations as will most conclusively prove the effects of the said modes of culture for wheat (that is, the effect of a flat and ridged surface) upon the crops of grass and corn which may follow.

Resolved, That this Society will contribute the sum of $26, provided the aforesaid societies will contribute the balance required for the above-named premiums. The said experiments to embrace not less than five acres of each mode of culture.

Note 1. In the grass-crop the apparent difference, if any, is all that need be noted and reported. It will be required that the relative cost of the different modes of culture shall be reported with at least proximate accuracy; also the description of soil, quantity of seed-wheat per acre, date of drilling and sowing, distance between the drill-lines, and observations of the appearance or condition of the crops at various stages of their growth.

It is suggested that the width of the narrow lands or ridges to be drilled, shall equal the width of the drill, which is generally, probably uniformly, five feet; because on such ridges the drilling can be executed with accuracy; whereas if the ridges shall be narrower, or wider than the drill, the team will have to be altered in its position on the ridges at each through, and therefore can not be driven accurately; and drills will also be made at frequent intervals in the bottoms or middles of the furrows. Ridges of five feet can also be reaped with accuracy and facility by reaping-machines, because the latter are generally of the same width. If the land is in sod, ridges of five feet in width can be more deeply and thoroughly ploughed into ridges again, for corn, than those of the ordinary width of four feet, and the width proposed is probably as well suited in all respects for the production of corn as any other width of what are termed *narrow lands*.

It is also suggested that where surface-drains or water-furrows are necessary in land to be drilled, such furrows should be made previously to the drilling, and should be again cleared subsequently to the drilling."

This offer is issued by Mr. M. Tilghman Goldsborough, the efficient President of the Society. Mr. G. resides at Ellenborough, near Easton.

A MODEL BARN.

A CORRESPONDENT of the *Farm Journal*, one of the best of our exchanges, gives the following account of a model barn, on the farm of George Wilson, Esq., near Bellville, Mifflin county, Pa.:

It is a hundred and seventeen feet long by sixty-five wide; there is stabling under the whole, except a wagon-shed at the one end, the whole width of which is twenty-two feet, and is as long as the barn is wide—made to drive through; an arched cellar of thirty feet in length, and eight or ten wide, takes up a part of the wagon-shed. Above the stabling are the hay-mows; then

seven or eight feet above is the main floor, running the whole length of the barn, the entrance being at the end; under this is another floor, forty by eighteen feet, running across the barn—used for cleaning grain; under the main floor are the granaries; corn-cribs are over the wagon-shed on either side of the upper floor; a threshing-machine is arranged, with horse-power, in the main floor, at one side, so as not to be at all in the way, and the horses work n the wagon-shed beneath, an upright post passing through the floor, and connecting with the main wheel. Horses and driver are always in the dry—protected from a hot sun in warm weather, and from the chilling blasts of the cold, inclement season. The straw and other things for the manure-yard pass out in front over a scaffold level with the upper floor, which is at least twenty feet high, making it very easy to put out a large amount of straw. The hay all descends seven or eight feet below the upper floor before it reaches the bottom of the mow, so that it is no trouble to unload it; but, without a more minute description, I must say that this is the most convenient barn that I have ever seen. It is not the "double-decker" barn, of which there are many in some parts, but this one was planned by the owner, projected bv him alone, his carpenters working by his directions. The whole cost was about $3000. It is on a fine farm of near two hundred acres of tillable land.

THE VALUE OF ROOT-CROPS.

It is reported as a remark of Mr. Webster, that if the turnip-crop of England were to fail for two years in succession, that country would be ruined. This, of course, is a figurative speech, but there is much truth in it. A chemical analysis of turnips, however, would lead us to draw inferences the reverse of this. A root or fruit of which water forms 90 to 95 parts in every 100, can scarcely be thought very nutritive; and if the doctrine so very current, and which we have urged, that food containing nitrogen can alone be made useful to produce muscle, is true, then turnips can not rank very high among such kinds of food. But we are beginning to inquire, at least, whether we and others are not in error here. Whether the great quantities of nitrogen in the atmosphere were not made for some other reason than because the Great Architect of all made oxygen rather too strong for common purposes. While so much oxygen is consumed by all forms of life, what service does the nitrogen perform? "It feeds plants." True, and *may it not* also feed animals? If not, why not? We do not attach so much force to the logic used on this subject as we have done, and facts and experiments certainly compel us to no such result. Potatoes yield but very little nitrogen, about 1½ parts in 100. Whence, then, comes the constant supply of muscle for the poor Irishmen in their native hovels? A very large proportion of the food of thousands of them, and almost the whole of many, consists of the potato only. Do they grow thin and weak? Neither. The carbon of the potato forbids the former, but what furnishes the muscle and imparts strength? Either we eat a wonderful excess of this muscle-forming food, or there is some mistake in our logic on these matters. But look, again, at the Esquimaux. Whence come the muscles of that race of oil-feeders? Who labors harder than the ox, who feeds, often exclusively, on grass? The horses of hundreds of farmers, and especially those of twenty or thirty years ago, were kept without any allowance of grains. Whence comes the daily supply of nitro-

gen in the milk of the cow? She is fed, in many districts, with the same kind of feed.

Do you reply that all these substances contain nitrogen? We admit it. But we also claim that more nitrogen is voided in the excrements of these animals than is furnished in these kinds of feed. By Liebig's analysis, 100 parts of dry hay give 1.5 nitrogen, while by Bousingault, dried cow-dung gives 2.3 nitrogen. But this is aside from our main object. We recur to the subject of roots.

Turnips are found to be of great benefit to cattle, and why? We are inclined to explain it on the principle that concentrated nutriment is not so wholesome as that which is more diluted. The more diluted our food, provided we do not overtask the energies of the intestinal canal, in the conveyance of it to its destination, the better for the health of the animal. May not this be the rule? In such cases, the absorbents have more time and a better opportunity to possess themselves of what they need, without suffering any thing to escape them. We do not assert this. We only suggest where no one appears ready to establish any thing. The fact is universally admitted, that concentrated nutriment does not, of itself, form healthy food as an exclusive diet.

Again, the *ingredients* of turnips, etc., may be very favorably proportioned and combined to produce a physical effect peculiarly favorable upon the membranes with which they come in contact, and thus tend to secure a healthy condition in them. Is there any more satisfactory explanation of *the how* so vapid an article as a turnip is proved to be, should be so efficient?

But all roots usually cultivated, and all fruits resembling them, are peculiarly desirable as feed for cattle. Beets, carrots, pumpkins, etc., have proved of great value for such purposes. Indeed, we can hardly doubt that the green stalks of corn, when fed to animals, pay better than the grain. Scores have given the results of their experiments, and among them all there is a marked agreement. The exceptions are few, if any. And it is obvious that in the green stalk the elements are in a condition more resembling roots, than is the grain, which is a more concentrated form of feed.

The following, according to Boussingault, are the constituent elements of sundry crops:

	Carbon.	Oxygen.	Hydrogen.	Nitrogen.	Inorganic matter.
Dry Turnip,	429	423	55	17	76
Dry Beet,	428	434	58	17	63
Clover,	474	378	80	21	77
Oats, (the grain,)	503	372	63	22	40
Wheat, "	461	434	58	23	24
Rye, "	463	442	54	17	24
Potato, dry,	440	447	58	15	40

In these results there is a very great uniformity. But there is another matter to be taken into account. In the composition of 1000 parts of

Wheat, (the grain,)	117	are water.
Barley,	150	"
Oats,	100	"
Rye,	100	"
Maize,	130	"
Rice,	140	"
Turnips,	800	"
Red Mangel-Wurzel,	901	"
White Sugar-Beet,	869	"
Parsnip,	793	"

In the proportion of water there is a marked difference between roots and grains. How important this may be, what differences result from the combination of water in the root and water taken from the brook, we are unable to state. But is it not natural to suppose that the solid parts of the root, being to a greater or less degree in a state of solution or semi-solution, the food is in a better condition to be acted upon by the fluids of the stomach, and with more facility converted into chyle? And does not this tend to show the propriety of soaking grains, so far as it may be done conveniently, before feeding them?

Of the fact that soaking grains, and especially corn, for horses before feeding them, improves them, our own experience convinced us years ago. Whoever adopts this course will find fewer grains among the excrements of the stable, unchanged, than when the corn is fed in a dry state.

As to the comparative value of crops of grains and of roots, we offer the following as a tolerably fair approximation. Precision is, of course, impossible, where the conditions are so variable. The value of land, of labor, of manure, and of crops, is too various for the predication of any thing very definite. Various reports in the Hampden County (Mass.) Agricultural Society, bring the following as the cost of certain crops per bushel:

Wheat,	58 5-6 cents.
Corn,	54 2-10 "
Rye,	48 "
Carrots,	13 2-10 "
Turnips,	4 2-3 "

Making an estimate from various other reports of the Massachusetts Societies, (though at a lower rate than the premium crops,) and from other sources in our possession, we come to the following results, the quantity of land taken being one acre:

Carrots.—Produce, 600 to 700 bushels of 50 lbs. each, worth ½ a cent a pound, or $150 to $175. Cost of cultivation, say $75. Profits, say $75 to $100 per acre.

Sugar-Beets.—Produce, 320 bushels of 50 lbs. each, at 18 cents a bushel, its value is $57.60. Cost of crop, say $35. Profits, $22.60.

Ruta-Bagas.—Produce, 800 bushels of 50 lbs. each, at 25 cents a bushel, is $200. Cost, $100. Profit, say $100.

Turnips, (common.)—Produce, 600 bushels, at 12½ cents a bushel, is $75. Cost of crop, $40. Profits, $35.

Wheat.—Assuming 30 bushels as a fair crop, at $1.25 per bushel, the produce will be $37.50. Cost, $20; profit, $17.50. Or, by Hampden county estimate, the profit will be, say $17.65.

Corn.—Produce, 75 bushels, at $1, is $75. Cost of crop, $30. Profit, $45.

Reducing these results to a tabular form, we find the profits of an acre of

Carrots, say	$75 00
Sugar-Beets,	22 60
Ruta-Bagas,	100 00
Turnips,	30 00
Wheat,	17 50
Corn,	45 00

We do not pretend to accuracy. The cost of crops varies fifty per cent in different sections of country. Labor has no fixed price. The value of land,

and the interest on land, is as unsettled as any thing can be; and the value of crops of all kinds depends upon the state of the markets, and the facility for transporting the crop to the market. Still we have made out a rough model, which every one disposed to do so can correct, as the almanacs say, for his own latitude. We doubt not that he will find one thing true, to wit: that root-crops are among the most valuable of all the products of the farm.

It does not follow, we would add, ere we close, that roots are not excellent feed, even though they are of less profit as a crop for market. It is worth while to produce many things for our own use, which would not pay if carried off from the farm.

MINES AND MINERALS AND MANUFACTURING IN EAST-TENNESSEE.

We take the following from the *Knoxville Register* of the 12th, from which it will be readily perceived that the present course of the Legislature of the State of Tennessee, in granting aid to railroads, will tend to the early development of these latent resources, and make that State one of the wealthiest and most prosperous of the Union.

Much has been said of the copper-mines of Polk county, and from what we hear as daily occurring in that region, we are constrained to believe that their value has not been as yet half developed. But recently, we are told, the miners have reached the yellow sulphuret of copper, which we understand is an infallible indication of the inexhaustible extent of the mines, and also their incomparable richness. The fever which has hitherto prevailed in that quarter of East-Tennessee, seems not yet to have attained its highest pitch, as new discoveries are being made, new mines opened, and large transactions transpiring. But last week, we are informed, there were sales of two or three quarter sections of land, at about $1,250,000.

About five thousand tons of ore are now being taken from the mines monthly, and this of such richness as to be worth net one hundred dollars per ton, thus making the products of the mines even now half a million of dollars per month. What it will be when the shafts that are being sunk all penetrate the rich sulphuret, no one can conjecture, and what discoveries are yet to be made in the intervening spaces between the Polk county mines and those recently discovered in Carroll county, Virginia, "no man can know." That the two developments are but the out-cropping of the same continuous vein, which extends along our eastern border, we think there can not be the shadow of a doubt, as the Virginia and Polk county veins have the same direction, north-east and south-west, have the same dip, the same surface-indications, and are in the same chain of mountains. Beside this, the formation of the intervening country indicates as certainly the presence of copper beneath the surface, as do the masses of once molten matter which are to be seen where the copper has been found.

But these copper developments are not the one tenth part of the indications of the unprecedented value which is some day, and that now not very far distant, to be attached to mineral lands in East-Tennessee. To say nothing of our zinc, lead, marble, etc., etc., and the immense amount of capital which we have no doubt will be some day employed in bringing these

treasures out of the earth, we can point to our *mountains of iron and coal* as being of more value, ultimately, than all the copper-mines of the world, no matter how productive they may be.

It is strange, indeed, that all the capital which is now being invested in the mineral lands in East-Tennessee, should be controlled by this copper mania. There are immense fields of coal, unsurpassed in their extent, or in the quality of the coal, by any that has ever been discovered, in immediate proximity to the best iron-ore in the world, and that, too, so abundant, that we verily believe, with the fuel so near, and other facilities which may be had, together with the modern improvements in the art of making iron, the pig-iron may be made at a cost of little more than five dollars per ton. And yet thousands of acres of land in East-Tennessee, where this coal and iron so much abound, might now be purchased for less than fifty cents per acre; and that, too, in view of the fact that there are so soon to be radiating from Knoxville railways to the North, South, East, and West, over which the iron may be transported with profit to any market in the United States.

To Charleston, for instance, the time will soon be when it may be transported for eight dollars per ton, thence to New-York for two and a half dollars; to Cincinnati and Louisville for from four to five dollars, making the actual cost of the iron in New-York less than $20 per ton, in Charleston less than $15, and in Cincinnati less than $10! To our distant readers, who are familiar with the prices for pig-iron, ranging from $20 to $50, these suggestions may seem to be visionary, but they will not so think when we tell them that iron is now made in East-Tennessee after the fashion in which "our fathers" made it, and that, too, with charcoal, at $10 per ton, and that the iron men of East-Tennessee have always realized good profits in the Ohio River markets, though their only access to them heretofore has been by a transportation of near three thousand miles, (*via* the Tennessee and Ohio Rivers.) Here, then, is the place to "put money"—in the coal and iron lands; not that there are not large profits to be realized from a more complete development of our marble quarries, zinc and lead-mines; but iron has ever been, and must continue to be, an article absolutely indispensable, in some form or other, to every family in this and every other land.

COMBINED STEAM.

Reference has frequently been made to improvements in the machinery of the steamship "Arctic;" but no particular statement of the nature of the improvements has been made, that we are aware of. The New-York *Courier des Etats-Unis* supplies the desired information in the following paragraphs, which we translate from that paper:

The important modifications which are being made in the "Arctic's" machinery are designed to accelerate speed without increasing the expense of fuel, but rather diminishing it. The value of the improvement is about to be put to the proof, the alterations in the machinery being nearly completed. The improvement consists in the application of a new process of applying steam, known as the "Patent Wethered Process." The principle is very simple. It is, properly speaking, an augmentation of the propelling power of the steam, by combining it with another current of steam which has pre-

viously traversed the highly-heated atmosphere of the boilers, and thus raising it to a higher temperature.

To arrive at this result the steam, as it escapes from the boiler, is concentrated in the conducting-pipe, whence it is taken by two other pipes, which, dividing it into two portions, lead it off in different directions—one directly into the steam-chest, and the other, by an interior chimney, through the boilers, and in its turn into the steam-chest, after becoming super-heated. When the two portions reünite, the combined steam is at a very high temperature—some 400 degrees higher than usual. The movement is given to the engine in the ordinary way, but with a vastly-increased force.

A series of experiments, made under the direction of Mr. Collins, is said to have established the economy of this process, in respect to fuel, the saving in which is said to be about 70 per cent. By burning 666 pounds of coal an hour, the simple steam gives 19 and 3-10ths double strokes of the piston per minute; whereas the combined steam gives 20 and 1-10th, with 440 pounds of coal only.

IMPROVEMENT IN ROLLING RAILROAD BARS.

Mr. William Harris, late of the Rolling-Mill firm of Harris, Burnish & Company, of Pottsville, Pa., has just completed an invention for the manufacture of railroad iron, which, in the opinion of our ablest mechanics, is likely to give a fresh impetus to the iron manufacture, and to effect corresponding changes through the entire trade. It consists in a new method of arranging the rolls, and can not fail, wherever understood, to entirely supplant the old process.

By the old (present) plan, each pair of rolls has nine separate grooves, through which the heated mass from the furnace is successively passed, until it is delivered from the last in the shape of a railroad bar. Much manual labor is required; and even with the most skillful and expeditious workmen, the metal has time to cool very considerably before it is finished, thereby becoming less malleable, and causing a dangerous strain upon the machinery. The breaking of a roll in such a mill, it is well known, is but a common occurrence.

Now, instead of the one set of rolls, containing the nine grooves, by the *new* process there are nine separate pairs of rolls, each having but one groove, arranged in one continuous line, with close ducts or boxes between; so that the "pile" (the hot ball of metal) is fed in at one end, and comes out at the other a railroad bar! The principal advantages claimed, are, economy of time and saving of manual labor—highly important considerations, as all iron manufacturers well know.

Let us compare, (and our data throughout, it may be proper to remark, are not mere guesses, but have been ascertained by accurate calculations:) By the old process, a bar of 21 feet, the usual length, is manufactured in 2½ minutes; by the new, in the same time, one of a hundred feet could be run out, if the "pile" could be prepared; or, with the speed proposed for the new machinery, a bar 30 feet long may be finished from the "pile" in 30 seconds!

By the old plan, ten men and boys are ordinarily employed in the rolling process alone; by the new, but one, and his business would be solely that

of superintendence—there would be no manual labor for him. For instance, the heater brings his "pile," it is put in at one end of the continuous line of rolls, and requires no further manipulation till it is delivered, a railroad bar, at the other.

Another prime advantage claimed for the new process, is the manufacture of the "red-short" iron into railroad bars. This species of iron, it is well known to manufacturers, possesses a peculiar brittleness when hot, that renders it difficult, if not impossible, to work by the old process, though remarkably tough when cold, having a long fibre and making the best of railroad iron. On the new plan, the time occupied in the manufacture of a bar is so short, that the metal can easily be retained at a workable temperature during the entire process. This will undoubtedly tend greatly to improve the general character of railroad iron; as the "cold-short," now mostly employed for that purpose, (because it is most easily worked,) becomes exceedingly brittle when cold, being in very many cases not much better in that respect than common pig-metal.

The new machinery used is of the simplest mechanical construction, and not at all likely to break or get out of order. It consists mainly of a horizontal shaft, to which are attached, by plain bevel-gearing, the several rolls, some revolving vertically and others laterally, (in order to compress the metal on all sides.) The rolls are set apart at distances corresponding with the successively increased lengths of the "pile," in its passage through them—the first four or five being comparatively close together. Hence the entire length of the line of rolls, for manufacturing bars, say 21 to 30 feet long, would not exceed 100 feet. No more power is required than in the old process, as the metal is acted upon but by one roll at a time; and not near so much toward the finishing, as in the old process the metal has by that time cooled very much, and of course is less malleable; while by the new, the whole operation is performed so speedily that the temperature of the metal is very little reduced.

As to the cost of a mill constructed with the new rolling machinery, a liberal estimate places it at about 15 to 20 per cent more than the present expenditure; but the new rolling apparatus *alone* will not cost more than 10 per cent over the price of the present rolls. The other increased expense results from the additional number or improved capacity of the furnaces necessary to supply the new rolling machinery, and of course is to be considered in connection with the proportional increase of manufacture. This will become plain by a simple calculation: A mill constructed on the old plan can work up about 70 tons of metal in 24 hours; that is, in the largest establishments, with the best machinery and the most experienced workmen. But, with the new rolling gear, 120 tons can be manufactured in 12 hours; or, nearly four times as much—the yield in both cases being limited by the rolling power. The principal difference, therefore, so far as cost is concerned, after the new rolling apparatus is introduced, is in the additional number of furnaces required to keep it going.

There are other incidental advantages connected with this invention, that we have not attempted to enumerate; we may have occasion to allude to it hereafter. The model has been examined by a great many persons, and the actual process of manufacture performed with small bars of cold lead. The general opinion expressed is admiration and implicit confidence in its success.—*Pottsville Miners' Journal.*

ON MANURES—THEIR USE.

POUDRETTE, GUANO, COPOSTS, GYPSUM, LIME, MARL, ASHES.

MANURING is the first, second, and third requisite for good farming. We have often treated on these topics, but again present a short and practical view.

POUDRETTE, well prepared, in our opinion, is the best of prepared manures, although some reasons exist why it is not so extensively used as it might be. Its odor sometimes is unpleasant, and where this objection does not exist the absence of odor is the result of improper treatment, by which its ammonia is dissipated. It is, however, so prepared as to free it from both objections.

Poudrette should be sown in a dry state, like ashes or plaster, and covered by the plough or harrow. It should never be left exposed on the surface. It is useful on all soils, and for all crops. For grass-lands, no application is better. For turnips it is unsurpassed, perhaps unequalled. For strawberries it is remarkably successful. For corn it should be scattered in the hill, *not* in a heap, a small gill in each, being about eight or ten bushels per acre. On potatoes twice that amount, or more, may be used profitably. For peas, beans, etc., sow the poudrette in the drill or hill. For grape-vines, fruit and ornamental trees, scatter freely among the roots after and before using the spade, etc. Grain-crops require that it should be spread broadcast, quite freely, and covered lightly with the seed. If masses of poudrette are left in contact with plants, it destroys them by excess of heat, like Peruvian guano. For melons, cucumbers, etc., mix freely and thoroughly with the soil in the hill, before planting. For asparagus it may be applied in a similar way, either in the fall or spring.

The presence or absence of ammonia may be attested by mixing a small quantity of it with unslacked lime, well pulverized, in a tight bottle, and keeping it close for half an hour. On removing the cork, the smell of ammonia should be quite powerful.

GUANO stands among the very best fertilizers. But what guano? It has been considered that the Peruvian guano was far superior to any other. But we are not ready to assent to this doctrine, without qualification. If nitrogen is the element wanted, then guano can have no competitor. But is this so? We think not. We believe that the phosphates are of far more value in most cases than ammonia. And why? Ammonia acts on the instant, and its virtue is not so permanent. It secures the present growth of the crop, but is not efficient in making a good permanent soil. Beside, an excess of Peruvian guano will destroy the crop. Like alcohol on the human system, a small quantity may give present energy, but too much burns up the crop it is designed to help.

We give the first place to the phosphates. As we have lately remarked, it is from the want of these that so many wheat-fields have become barren, and the supply of the phosphates to those fields has prepared them for greatly increased crops without the addition of any thing else. Our readers are familiar with the remarkable results which attended the use of the phosphates on certain lands of Judge Buel. Some of the South-American and Mexican guanos are richer than the Peruvian, in these elements, and hence we should prefer them at the same price. But they are also cheaper, per ton, although we have just learned that the price of the Peruvian is here-

after to be diminished some twenty per cent, a circular being issued to this effect.

It is also true that wheat-lands, as well as others, are deficient in ammonia. But our belief is, that if the *soil is* otherwise *properly prepared*, the plant will find nitrogen *somewhere*, perhaps in the air, perhaps *elsewhere;* or, in other words, furnish every thing else, and by this very process, *in fact*, (but not of necessity, in theory, of course,) every thing will be found that the plant requires. We have never heard of a soil deficient in nothing but nitrogen.

Guano is an excellent application for worn-out wheat-lands, for clover, and, on many soils, for grasses. It is also useful when applied in connection with seed, at the time of sowing, the seed being steeped in it. It is also advantageously applied to grape-vines, and to fruit-trees. The ground should be forked about their roots, away from the body of the tree, the guano spread on the ground, and then liberally watered.

At the South, on cotton-lands, Peruvian guano is found to be very productive. Near Charleston, S. C., it has been used on what was originally "fine and productive cotton-lands, abounding in decomposed granite, and resting upon a good clay sub-soil." It had been exhausted by injudicious croppings, like most of the soils in the older States. The application of guano and of plaster succeeded admirably, both with cotton and corn crops. Those portions where the guano and plaster were applied, produced some five times the amount of seed-cotton that was produced on the same lands where nothing was applied. On the corn-lands there was little difference between the portions manured by guano and by cotton-seed. The guano was applied to the cotton at the rate of 80 lbs. to the acre, mixed with 100 lbs. of plaster, and sown in the drill. On rich alluvial land, producing forty or fifty bushels of corn per acre, guano was found of material benefit. The African guano did not prove to be efficient.

Peruvian guano, when used in vegetable gardens, should be thoroughly mixed with the soil before sowing the seed, or better still, should be thoroughly mixed in compost before it is used. Any loamy soil answers well for the compost, and the soil should be three or four times the bulk of the guano.

PHOSPHATES, COMPOSTS.—Next to guano, for general application, we should specify various prepared manures, of domestic production—prepared bones, mineral phosphates, like that found at Crown-Point, N. Y., and in one or two other localities in this country. Preparations, HONESTLY MADE, of the "*phosphates*," "*super-phosphates*," and "*improved super-phosphates*," may be even superior to many of the guanos. But there is here so great a temptation to swindle, as in the milk-trade, that no purchaser is quite safe without an inspection of every bag. We would have State inspectors in every city, who should place his seal on every package, and would make it penal to sell without. The manufacturer can afford this expense. He can make large quantities so much cheaper than the farmer can prepare his little, that the addition of this tax would leave him a good profit, and yet furnish an article well worth its cost to the consumer. In this class of manures should also be ranked those from fish, and animal offal of all kiuds.

There are no lands, in our belief, where these preparations would not be serviceable. They, especially those first named, are excellent when applied to a crop of wheat, and all other products of the same general character. Grass-lands are much improved by them; and corn when the soil is partially exhausted.

For potatoes, "English farmers use a compost of 30 lbs. of wood-ashes, 15 of burnt bones, 10 of plaster, 20 of salt, 30 of air-slacked lime, and 7 of saltpetre." A compost of a portion only of these would be highly serviceable, and prepared bones, and ashes, or either alone, on many soils, would greatly increase the crop.

LIME, in a variety of forms, is beneficially applied. Various marls, in which the carbonate of lime predominates, are extensively employed in many sections of the country. Pure lime acts on the soil both physically and chemically, or, in other words, it is useful in making clay soils lighter, light soils more consistent, and in absorbing moisture and gases. It also counteracts the acids in the soil, and in that way prevents the growth of certain weeds, while it positively improves the condition of the soil. It also acts by causing the insoluble silicates, etc., to become soluble. Lime is also a stimulant, promoting an increased action in all the elements of the soil, producing a more rapid growth. As a general rule, perhaps eight or ten bushels of quick-lime should be allowed to an acre, and on some soils, if of the mild forms, carbonate, marls, etc., an indefinite amount up to ten times that quantity. Different soils should be treated according to their condition.

Ashes are chiefly useful on account of the alkali they contain, and their action is similar to that of lime. Leached ashes, having lost much of the alkali, must be used in much larger quantities to produce the same effect. This is suited to root-crops, grass-lands, wheat-land, rye, potatoes, clover, and almost all crops. Quick-lime should not be used in connection with animal manures, as it sets free their ammonia. Mild lime, marls, etc., may be used in connection with such manures with good effect.

Lime in all its forms, whether as gypsum, as pure lime, in marls, or ashes, has a permanent effect upon the condition of the soil. Whenever, in ploughing, the sub-soil is turned up freely, there should be a liberal application of lime in some form. Perhaps ashes, used very freely, will be found most economical.

For some soils, gypsum, or sulphate of lime, proves an admirable amendment, but it is not quite certain, before trial, whether it will be good for a given soil.

Gypsum probably acts in different ways. It absorbs moisture, and valuable gases, perhaps "attracts" ammonia from the air, and it yields also its sulphur and its lime. Such, at least, is most probably the fact, although we have no means of proving, to a demonstration, what its operation is. Its action, according to Johnston, is much increased, when used for a crop of clover, or peas, etc., if mixed with common salt. Probably a double decomposition is thus effected, of which the growing crop derives the benefit.

As to the comparative economy of the various fertilizers, we doubt whether any general rule can be given. Their action, and of course their value, depends on circumstances.

We have mentioned salt among our fertilizers. We doubt its especial value on the sea-board, but believe it useful in sections remote from the influences felt near the sea.

GUANO is in very general use, especially at the South. Eighty tons were recently sent from Norfolk to the interior in a single day. The demand from the interior of North-Carolina is very large.

PRESERVATION OF FRUITS, AS APPLES, PEARS, TOMATOES, ETC.—EXPOSURE OF POTATOES TO THE SUN.

Air and warmth are essential to the decomposition of matter. Could a convenient process be devised for the complete removal of one or both these essentials, housewives might hold a jubilee. Different processes for accomplishing this, to a greater or less extent successful, have been devised. Among these are the following:

The use of an ice-house is sometimes resorted to, and while the intense cold of the interior would but hasten their destruction by freezing them, a compromise is made, and a kind of vestibule or ante-chamber is constructed, which has a uniform cold temperature, but yet above freezing. This answers a very good purpose. We have known pears, peaches, and plums preserved in that way a long time. But every one has not these facilities, and the success of those who have them is but partial. Small quantities only can be thus provided for.

Tomatoes we have eaten the year round, as good as when fresh, by the following process:

Let the tomatoes be ripe and fresh; remove the skins; pack the tomatoes into tin boxes of about a quart capacity; season them as if for immediate use, (avoid cayenne); solder on the covers of the boxes, leaving a pin-hole in each cover; boil the *boxes* half an hour; any number of boxes may be boiled at once. Immediately upon taking the boxes from the boiling water, stop the pin-holes with solder or sealing-wax. If at any time before the boxes are cold, you detect the slightest sound which indicates the escape of air from an aperture in the box, the hole must be found and closed. If sealing-wax is used for closing the pin-holes, care should be taken lest it be broken off in moving the boxes.

A new fact in domestic economy has been communicated to us (says the *Boston Cultivator*) by Mrs. B. Shurtleff, of Chelsea. At the usual time of gathering quinces, they were put into barrels filled with water, and placed in a cellar. A few days since they were opened, and the quinces found perfectly sound—not one had decayed in the least. We are indebted to Mrs. Shurtleff for a specimen of the fruit which has thus been kept through the winter, and had just been prepared with sugar in the usual way. It has the aroma, peculiar flavor, and all the qualities of the fresh quince.

We have been inclined to try experiments by the use of freezing mixtures. We have queried whether some of these might not be so *diluted* or mingled with inert substances, as sawdust, so as to liquefy very slowly, and thus, when kept at rest, be made to act moderately, and for a long time. We know, in practice, that a very trifling matter, in appearance, will have sometimes a great effect. Thus, wrapping each apple or pear, or peach, etc., in a separate paper, and carefully packing them in a cool, dry place, tends to delay their decay very materially. Covering them with dry sand has the same effect.

It has also been the practice of extensive fruit-growers to keep their apples carefully packed in barrels, as long as possible under the trees, in the open air. Why this is done we can not tell, but it will be hard to persuade some whom we know to have been accustomed to this practice for scores of years, to abandon it. There may be something in it. And we are more inclined to favor this opinion, from the fact that it has ever been the custom of many English gardeners to expose their potatoes, especially the early ones, to the

sun and air for two or three days ere they are housed, under the conviction that they are thereby improved in flavor, and will keep better beside. They become changed to a green color, more or less, by this exposure. A writer in a recent number of the *Republican Journal*, copied into the *Working Farmer*, assures us that by such exposure they become actually poisonous. He does not inform us what the poison is, and it is strange if it be so. One of our assistants has eaten no others than those thus discolored and made "poisonous" for weeks together, and he thinks the poison must be very slow in its operation, and is certain that its flavor is very fine. Some are in the practice of placing quick-lime in the barrel or pit, so as to absorb the moisture, and they are inclined to believe it may exert some other influence in preserving the potatoes from decay. The potatoes are separated from the lime by any convenient process, as a layer of straw and the like.

As moisture and warmth (60°) are necessary in the process of fermentation, any arrangement which avoids these conditions will have a favorable effect upon the permanence of what may otherwise be subject to speedy decay. Nor can we always give a very satisfactory account of the reason of the thing. Who would imagine, without experiment, that a pint of white mustard-seed would thoroughly arrest the process of fermentation in a barrel of cider, fixing it permanently in the condition then existing? Yet such is the fact, and, after it is discovered, *very* philosophical reasons are assigned in explanation. There is some danger of being too "scientific," and thereby neglecting valuable discoveries. We must "live and learn."

ADULTERATION OF MANURES.

JUDGING from a late article in the *English Gardeners' Chronicle*, as well as other advices, it appears that the English farmers are having their own troubles with the manufacturers and venders of super-phosphates and other fertilizers. All the honesty at least does not appear to be centred on the other side of the water. The editor of the *Chronicle* says, "there was a time when cheating a Scotchman was about as difficult as cheating a Greek," but that they have sadly degenerated in this particular. In the transactions of the Highland Society, a Mr. G. William Hay, a distinguished agriculturist, gives a kind of autobiography of how he was victimized, which, for the benefit of our readers, we copy. A word to the wise is sufficient.

It appears that being desirous of trying experiments with various manures in the cultivation of turnips, he put himself in communication with a dealer in agricultural manures. Among the substances he wished to employ were super-phosphate of lime, nitrate of soda, phosphate of soda, sulphate of potash, sulphate of ammonia, nitrate of potash, phosphate of magnesia, sulphate of magnesia, and muriate of ammonia. When the parcels came to be chemically examined, the nitrate of soda was found to contain only 56 pounds of that substance in every 100 pounds. The phosphate of soda just 6 pounds in the 100 pounds; the sulphate of potash 60 pounds; the sulphate of ammonia not quite 9¾ pounds; the nitrate of potash about 11¼ pounds; the phosphate of magnesia 2¾ pounds; and the muriate of ammonia 54 pounds only. The super-phosphate of lime (so called) contained only 4 per cent of soluble phosphate of lime, the other 96 pounds consisted of water, gypsum, siliceous

matter, some kind of free acid, and insoluble phosphate of lime, a perfectly useless substance. On complaint being made, the only satisfaction he got was, that they could not think of taking the rubbish back, as it was the *usual quantity* for agricultural purposes.

Mr. Hay also informs the public that in Scotland animal charcoal is not what it ought to be, and that London night-soil consists of the scrapings of the streets, with a little limestone and soil, and that gypsum contains 40 per cent of sulphate of baryta.—*Pennsylvania Farm Journal.*

MANUFACTURE OF ENVELOPES.

The manufacture of envelopes has become an immense business, and though we are not familiar with the processes employed in this country, in this branch of industry, we have been gratified by reading the description of a machine, invented by Mons. Remond, for a long time resident at Birmingham. We find it in the *Publication Industrielle*, and translate it for the benefit of our readers.

After being cut, the envelopes are laid in a pile upon a platform, movable by a counterpoise, or better by elastic springs, so contrived as to rise gradually as the number or thickness of the pile of envelopes is diminished. At the centre of the machine is a vertical shaft, armed at the upper extremity by a cross-bar or beam, or horizontal porte-pistons. At the extremity of this, metallic gluers are fastened, each of which consists of a small iron cap, capable of changing its position, in any direction, corresponding to the different forms of envelopes. These caps pass simultaneously over a gummed roller, and thus cover their lower surfaces with a coating of gum, or paste, which they carry on to the envelope which they have just taken from the pile. Thus the bar turns till it meets a vertical stop, which limits its motion. It then descends, in contact with this forked stop, so as to rest upon the pile of envelopes by the caps alone. As it rises, the upper envelope is sufficiently coated to adhere to the caps, and follows the ascending motion of the bar, which, as it clears the upright stop, again receives a lateral or rotary motion through half a revolution. During this rotary movement, it receives another downward movement, which allows the caps at the other end of the bar to dip themselves in their turn into the gum, so as to repeat the process already described.

It is obvious that this machine, thus contrived, has a double action; that is, each arm of the bar accomplishes at the same time a distinct operation, either to glue, or fold, or take up the sheets.

The forked stop which we have mentioned, is designed to arrest the motion of the bar at the proper time and place, namely, when it finds itself in the axis of the folder. The envelope which adheres to it then descends with the bar, and falls into a rectangular folder, and by this action the four corners are forced to detach themselves and to rest against the perpendicular sides of the box. That part of the envelope which is designed to contain the address, occupies the bottom of the folder, and the four corners the sides. Four cavities serve for a protection to the sheet, and the arrangement prevents the envelope from becoming misplaced when the piston retires. The piston alone enters the interior of the box, and the caps descend on the exterior,

leaving, in succession, the sides coated with gum. During this descending movement the second piston has also descended to draw up another envelope, and so on. Lastly, by this descending movement the movable see-saw which serves as a bottom to the folder, and as an inclined plane to the envelopes to conduct them outside the machine, raises itself during the pressure of the piston, to fall back by its own weight when it is left to itself; that is to say, when the folding is finished, as just described.

When the piston rises again, one side of the envelope, which is folded underneath, closes itself. At the same time the two gummed sides, and then the fourth side, which finishes the folding process. These four sides accomplish their double movement; that is, descending and ascending, or closing and opening, while the bar makes a half revolution. It is then that they disengage the fulcrum of the see-saw, which assumes an oblique position, and conducts the envelopes into a vertical box, where they pile themselves one upon another. The top of this box is widened, like a tunnel, for facility and regularity of movement; and lastly, a piston or rammer descends and compresses each separately, to prevent them from bursting open at the folds.

The envelopes are then taken by a counter, the purpose of which is to separate them into parcels of twenty-five each, leaving a small bit of board, as a weight, upon each parcel.

WEAVING BY ELECTRICITY.

While other nations are preparing their various novelties for the Paris Exhibition of 1855, we are assured (says a correspondent of the *London Times*) that Sardinia will not be behindhand in the scientific machinery department, by a recent experiment made here of the invention of Cavaliere Bonelli, for the application of electricity to weaving, which is more simple, less embarrassing, and, what is of far greater importance, more economical than the invention of Jacquard, which, amidst the general progress of the age in mechanical and technical matters, has undergone but slight modifications in the material construction, and no one has dared to make a change in its principle.

By the present invention, instead of the numberless and expensive cartoons, either full or hollow, you see small iron bars magnetized only when invested with the voltaic current, so that while at every passage of the shuttle it was necessary to change a cartoon, it now suffices to vary the ways which give passage to the electric fluid, and the lodestones change their action every moment, according as the teeth of the comb under which the design passes, and with which they correspond, rest upon the conducting or insulating substance. As the point of the pantograph reproduces a design diminished or enlarged, and as the point of Bain's telegraph exactly copies a signature at the distance of hundreds of miles, so the loom of Bonelli reproduces woven the designs which pass under the comb, and all this without rendering necessary a change in the thousands of Jacquard looms now existing, which, if desired, may be worked alternately with electricity and with cartoons.

Turin first, then Genoa, Lyons, and Paris, saw in operation this prodigious innovation, and unanimously admired the simplicity and reliability of the means with which it is carried into effect. In these cities a loom on a small scale has been shown, but the inventor intends shortly to exhibit in Paris and London a loom on a scale worthy of the places and the invention. After

having secured the property in his discovery throughout Europe, he has just sold his patents to three eminent banking houses, two of them in Turin and one in Lyons, and very soon several looms, which are now being constructed, will be sent abroad to serve as models for the system of electric weaving in most of the manufacturing countries of Europe, and for its introduction into the United States of America an agent is now on the point of starting. It is difficult to foresee the changes which may spring from the application of this new agent to the business of weaving, as not only the economy consequent on it must induce a decline of prices, but the new means afforded by this invention will render easily attainable results such as are now only reached with difficulty or with great expense, as Gobelin tapestry, etc., and others utterly unattainable by any means hitherto known. Even in the present age, so rich in useful and important inventions, no doubt this will rank among the first.

BIRDS: THEIR UTILITY.

We do not always know our best friends. But experience sometimes teaches us, working out for us conclusions very unlike those we had previously entertained. In the history of birds, similar examples are not wanting. A writer of note says, "After some States had paid three-pence a dozen for the destruction of blackbirds, the consequence was a total loss, in the year 1749, of all the grass and grain, by means of insects, which had flourished under the protection of that law." Another ornithologist, Wilson, computes that each red-winged blackbird devours, on an average, fifty grubs daily during the summer season. Most birds live entirely on worms and insects, and though some are destructive to our cherries and other fruits, the numbers of such are small, and these propensities are to be offset by numerous and valuable services which no other agencies can perform.

The following descriptions may throw light upon the treatment these birds have a right to claim at our hands:

The *Baltimore Oriole*, a beautiful and well-known bird, called sometimes Gold-robin, Hang-bird, etc. It feeds chiefly on insects, and its services are of great value. They visit our gardens for grubs only, and thus protect our pea-vines and other plants from a destructive enemy.

The *Red-winged Blackbird* often arrives at the North ere the snow has disappeared. It feeds on grubs, worms, and caterpillars, without inflicting any injury upon the farmer. Hence it does him a very important service.

The *Cow Blackbird* is less numerous than the species just described. They follow our cattle, and catch and devour the insects that molest them. From this fact they derive their name.

The *Rice-Bunting*, or Bob-o-link, is constantly employed in catching grasshoppers, spiders, crickets, etc., and thus does good service. It is, however, said to do some injury to grain, especially at the South, and particularly when they collect their young in flocks preparatory to a flight toward their winter quarters.

The *Crow Blackbird* is one of our early visitors. While it devours immense numbers of grubs, etc., it is also clearly proved that it pulls up the corn. Southern farmers attempt to diminish the amount of such depredations, by soaking their corn in Glauber's salts, making it unpalatable to the birds.

The *American Crow* devours every thing eatable, without much apparent choice, whether fruits, seeds, vegetables, reptiles, insects, dead animals, etc.

The *Cedar-bird* gathers caterpillars, worms, etc., which it devours with an insatiable appetite. Our cherries and other fruits are not spared, but are devoured, in their season, as rapidly as are the canker-worms, and other enemies of the trees, in their season. But whatever injury they may thus inflict seems irremediable, as their numbers can scarcely be diminished by any agency in our control.

The *King-bird* lives wholly on insects and worms, without any mischievous propensity, unless it be occasionally to devour honey-bees. That he has a taste for such food is pretty well established, though some deny it.

The *Cat-bird* is constantly employed in devouring wasps, worms, etc., but does not always spare our fruits. They devour of the latter, however, much less than would the insects they destroy.

The *Wood-thrush* lives on worms, beetles, etc., and never commits depredations of any kind. Their residence is much more constant in the extreme South than further north.

The *Blue-bird* confines himself to the destruction of beetles, spiders, grubs, wire-worms, etc., and though they attack the sumac and wild-cherry, and other wild berries, they do no injury to the fruits or vegetables of the garden.

The *Golden-winged Woodpecker* is reputed as a fruit-stealer, but, "with all its faults," it is of great use to the horticulturist.

The *Red-headed Woodpecker*, like the former, helps itself to fruits of all kinds, carrying off apples even in its bill; but this useful laborer is also worthy of his hire; it does much more good than evil.

The *Downy Woodpecker*, and perhaps some other species, come under the same category as those species already described.

CRESCENT IRON-WORKS.

These works, located at Wheeling, in Virginia, belong to a Company incorporated by the Legislature of Virginia, who are now enlarging their capital for the purpose of carrying on a more extensive business. The following particulars relate to the property of the Company and their preparations for the manufacture of iron for useful purposes:

The Company owns and places as part of the stock under the charter, large tracts of ore-land in Monongalia and Marion counties, Virginia, within seventy miles of Wheeling, and near the Baltimore & Ohio Railroad and the Monongahela River. This land abounds in ore of the best quality, and of sufficient quantity to last for centuries to come. It yields forty-five per centage of iron, is a four-feet vein, and is in the same hills and together with a bituminous coal-vein of seven feet thickness, and plenty of lime and sandstone, together with an abundance of timber and wood. They have now one furnace in operation that will yield some eight or ten tons per day, and they desire to erect with the additional stock two or three additional furnaces. The iron from these furnaces is brought to Wheeling at a cost of less than two dollars per ton, including wagoning, loading, railroad expenses, etc.

We will not state the cost of the manufacture of pig-iron at these works,

for persons manufacturing and quantities made may vary the cost materially. We will only state a few facts. The ore is delivered at the furnace at fifty cents a ton cost; labor is cheap, for the country is alike healthy and productive; and land and produce as cheap as in any other part of the country. There is every thing here combined to produce as cheap labor as at any place in the country. In addition to these advantages, the following facts show that in the simple item of cost of coal there is money to be made in this stock, as compared with eastern works. It requires six tons of coal to make, from the ore, a ton, say, of rails. This coal costs in the most favored localities east, four dollars per ton, - - - - - - - - - $24

Coal at these furnaces, and at the Crescent-Mills in Wheeling, costs less than one dollar per ton, - - - - - - - 6

Saved, - - - - - - - - $18

This is the saving made here in the item of coal alone for the manufacture of one ton of rails from the ore. Then for the supply of all western roads there is a saving in freight of five dollars per ton, giving these works, in these two items, a saving, all else being equal, of twenty-three dollars per ton. The iron from the works has been in use and is thoroughly tested, and found the best of iron, and the coal to be free from sulphur.

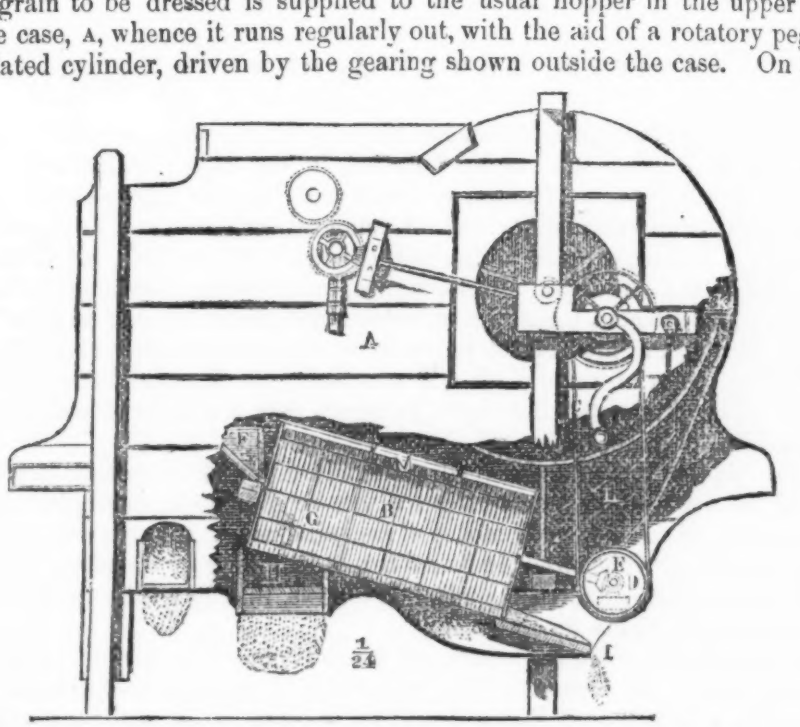
These works are peculiarly situated for economy and facility of operation, and we will describe them for the benefit of those who have not seen them. Wheeling Creek passes into the river through the heart of the city, and through the gorge in the hills that line the margin of the Ohio, and cause that picturesque beauty that gave the river its title of *La Belle*. The Crescent-Mills are situated on the south side of this creek, about six hundred yards from its mouth, where what is called Chapline's-Hill originally came down almost to the creek, and the road around it has been formed by taking out the rock for the building and the dirt and stone from the stripping the quarry. The works are so situated in the city that the dwellings of the hands are hard by; they are on a hard and level street, to the river but six hundred yards distant; they are on the bank of the creek, so that the sewers, which are large, and of stone, take off the ashes and refuse without expense or labor; the refuse of mill adds daily to the ground, instead of involving cost to carry it away; the creek affords the means of transit of ore and iron by barges from and to the railroad and steamboats, in the cheapest manner possible. The Baltimore & Ohio and Hempfield Railroad depots are within the six hundred yards distance, while the mouth of the coal-bank in our best coal-vein of six and a half feet of bituminous coal is not more than fifty feet from the works, and about thirty feet above the level of the ground.

The building for the works is one hundred feet wide and four hundred feet long, and from the eastern end, elevated to a level with the coal-bank, is extended a railroad track, on which coal is run in cars, and let down, without handling, by the side of each furnace. There are thirty-six puddling and fourteen heating furnaces at work. Three trains of muck-rolls, two of Burden's patent coffee-mill squeezers, one train of sheet-rolls, of boiler-iron rolls, one of bottom and top-rolls, and one full train of rail-rolls, with saws, punches, and all the necessary fixtures to make the mill complete for making rails in the most approved manner, the proprietors having availed themselves of all the improvements in other mills, and their works will compare favorably with the best mills in this or any other country. The machinery is driven by two engines of great power, and will turn out 15,000 tons of the best iron per year.

WINNOWING MACHINE.

THIS winnower involves a most complete departure from the principles hitherto followed in machines of its class. In it the separating action is produced by a rotary wire cylinder, into which the crude grain is fed at one end, whilst air is forced in at the other, to aid in driving off the chaff and foreign matter. A patent was secured for this machine in England, in October, 1853.

Our engraving represents the machine in side elevation, with a portion of the external case broken away, to reveal the disposition of the internal details. The grain to be dressed is supplied to the usual hopper in the upper part of the case, A, whence it runs regularly out, with the aid of a rotatory pegged or plated cylinder, driven by the gearing shown outside the case. On leaving the hopper, the grain first of all falls upon a horizontal vibrating screen of the common kind. This gives a partial cleansing action before reaching the main screen, B. The latter is driven by an endless belt, C, from a pulley on the first motion winch-shaft, this belt being passed over a pulley, D, driving the inclined screw-spindle by a bevel-pinion arrangement, E. The grain falls from its primary flat screen into a trough, whence it is conducted by the discharge-passage, F, into the upper end of the inclined screen. The first "tailings," separated by the primary riddle, pass off by the inclined trough, J. The next tailings are sifted through the upper part, G, of the rotary screen, and they fall away by the inclined trough, H. This upper portion of the screen is made finer in its mesh than the lower portion, and hence the tailings are correspondingly different. The last and best tailings pass off through the lower compartment of the screen, B, and the dressed grain falls out of the lower end of the screen, along the incline, I.



The screening air-blast is derived from the usual fan, the air passing from its air-chamber through the passage, K, as indicated by the arrows, and entering the open lower end of the screen, B. To keep the screen clean and free,

a brush, M, is fitted, so as to bear upon the wirework in its revolution. This brush is the same length as the screen, and it has liberty to move on hinges or joints, so that it may have a slight yielding action.

When applied in combination with a threshing-machine, the threshed grain is at once cleansed in this way, without any intermediate operation. In such a case the wire of the screen is finest in the mesh at the upper end, then a little coarser at the middle, and coarser again at the lower end; so that the first and second tailings pass through the two upper sections, and the grain through the lowest one. Stones, or large foreign bodies, all pass out at the mouth of the screen.

ELASTIC POWER-ACCUMULATORS.

Among the curious inventions of the day, few are more *attractive*, (we did not intend a pun,) than those included in our title. India-rubber shoes, clothes, combs, etc., are familiar to us all, and here we have another application of this wonderful substance. A small rubber string can be stretched by any child. Now, suppose he has ten, twenty, forty of these, all fastened at one end to the same spot. If he begins, one by one, stretching each to the utmost, and attaches them to a movable object, what will he witness? Nothing, perhaps, at first, but as he continues the process, by and by the accumulating power of these cords will overcome the inertia of the object, the cords will contract, and the object to which they are fastened will be drawn away from its position.

This process may be managed systematically, and the elastic cords combined at one end, or all connected with a ring, or hook, or staple, while the free end is adapted to such modes of fastening as one may choose.

A pound of vulcanized India-rubber, a foot long, if stretched to six feet, will support four hundred pounds. It follows, that by a little union of forces immense power may be obtained.

A modification of a boy's bow and arrow is one of the simplest adaptations of this power. If a smooth tube of suitable dimensions be furnished at one end with a looped cord, fastened to it on opposite sides, with any additional provisions for convenience in handling it with facility and accuracy, we get an engine perhaps as powerful as an air-gun. The tube furnishes an accurate guide for the arrow, and the arrow being drawn back, while locked into the elastic cord, by a notch, as into the string of the bow, it will escape, when liberated, with a force corresponding to the tension of the loop.

Harpoon-projectors are contrived on this plan, and in fact there seems no end to the modified forms in which this remarkable substance may be made useful. In the *harpoon-projector* several cords are applied, each of which is extended singly, and when all are properly arranged, the harpoon is set free by a trigger-movement.

A patent has been taken out in England, for the application of this "power" to different purposes, and we are informed by an English journal that this has been substituted, as a motive-power, for steam, and that a small screw-vessel is now in progress with the same sort of a "prime-mover." How this substitution can be made effective is beyond our conjecture, as we do not comprehend what power is to operate the elastic force.

UNIVERSAL FLEXION HARROW.

Among the useful inventions exhibited at the Crystal Palace, in the agricultural department, is the harrow described in our caption. Its peculiarity is indicated by its name, and it promises to be of considerable service, allowing every part to do its full duty, however irregular the surface of the ground may be. One of its chief practical merits consists in the simple but efficient nature of its hinges. Machinery may be generalized into two classes,—that which meets and that which does not meet with careful attention. The thoroughbred mechanic, to whom bad work is a most disgusting eyesore, is inclined to devote all his energies to perfection and improvement in the first of these classes; so that the number of those who can make self-acting mules to go in the cotton-mill, is possibly greater than of those who can properly construct a weathercock for its top. In the case before us, any delicate hinge would be quite misplaced, and all the difficulties, whatever they may be, have been overcome by the adoption of a "hook of double curvature," or a hook with its shank bent nearly at a right angle; so that, although readily connected by the most unskillful farmer, and perfectly free to turn in every direction required by the flexible nature of this triple harrow, it can not be disconnected, except by doubling the parts into an angle never assumed in the ordinary work of the field. This simple harrow is the invention of Mr. George M. Ramsay, and was patented on the 2d of May, having been previously patented in England.

ON ALLOYS, CONSIDERED IN RELATION TO THEIR CHEMICAL COMPOSITION.

BY M. A. LEVOL.

Translated from the Annales des Mines.

M. Levol seeks in his memoir to throw light on an important question. Are the alloys of metals definite combinations, mixed with an excess of one of the metals employed, of which a too rapid cooling does not permit the separation; or can metals combine with each other in all proportions? M. Levol considers especially the alloys of silver and copper. Even to the middle of the last century the alloys of copper and silver were believed perfectly homogeneous. Crammer and Jars (1774) were the first who announced the heterogeneity of poor alloys, and indicated the "*prise d'essai à la goutte*" in the melted alloy, as the only means of obtaining exactly the richness of the whole mass. Toward 1825, the heterogeneity of rich alloys was well proved by numerous experiments, made under the direction of M. Darcet, during 1824 and 1825.

M. Darcet arrived at this conclusion: that the alloys are always heterogeneous; that the poor alloys are less rich at the centre, and that the rich alloys are more rich at the centre. M. Levol has studied a certain num-

ber of alloys of copper and silver, of determinate atomic compositions, cast into little spherical moulds of cast-iron, with an attached arm sufficiently long that the sphere may cool slowly. He has determined for each alloy the richness of its different parts. He found that the alloy $Ag.^{3}+Cu.^{4}$, whose degree of fineness is 718.32, is very homogeneous after cooling slowly. This homogeneity has been proved, not only with little trial-spheres, but also on an ingot weighing 48 pounds, made on purpose. Its density was 9.9045, and in calculating it after the proportions of the two metals, the number would be 9.998. Homogeneity allows us to conclude that the alloy is a definite combination of the two metals.

For the other proportions tried, the spherical ingots have always presented a notable heterogeneity, which proves that they are mixtures of one of the metals in excess with the definite combination.

For alloys less rich than the combination $Ag.^{3}+Cu.^{4}$, the centre of the spheres is always less rich than the exterior parts. The inverse takes place for alloys more rich.

PAINT FOR BUILDINGS.

This is the season of the year which many farmers prefer, and wisely, too, for painting their houses or out-buildings. After the intense heats of summer, in which the wood absorbs a very large proportion of the oil of the paint, leaving the mineral portion quite too dry to be durable, and before the heavy fall rains commence, it is probably the best time to perform such labors.

And what color will you have? There are but few colors between which we should hesitate. These are white, and different shades of brown or stone-color. We are pleased with the effect of a clear white in the country, among the green leaves of the yard. For this, white-lead has been regarded as the best, and, in the end, the cheapest paint. It remains permanent longer than almost any other, if properly done, the oil and lead combining to form a very hard and durable coating. White-lead, however, has a powerful competitor in the white oxide of zinc. This paint holds its color remarkably well, and is claimed to be superior to white lead. It certainly appears well when newly applied. As to its comparative durability, we have heard very favorable accounts. It certainly presents, when new, a very handsome and very hard surface.

For dark colors there is more room for choice. There are dark zinc paints, but we have no personal knowledge of them. Blake's paint, also, which has been advertised in our journal, is a very good paint, and is thoroughly fire-proof. It is of a dark chocolate. Another variety is black, or nearly so.

A brown paint, which has come somewhat extensively under our notice, is a composition in which yellow ochre, verdigris, ivory-black, umber, and white lead, are the ingredients. Their proportions may be varied according to the taste of the landlord, but the result will necessarily be a dark color, running through all the shades of brown and chocolate. The ochre is of course the principal ingredient, and the other paints will be required more or less sparingly, as one may wish to depart from the color of the base. These colors are seen very frequently in the suburbs of Boston, so famous for elegant summer residences.

For fences and some out-buildings, coal-tar, which is much cheaper than the proper paints, serves a very good purpose, and if it does not add beauty to the substance to which it is applied, it certainly does promote its durability.

RECENT ENGLISH PATENTS.

Among the patents recently granted in England, and which can be understood without engravings, we select the following from our English journals:

Wheels and Axles.—T. W. Dodds, *Rotherham.*—In making his improved wheels, Mr. Dodds primarily rolls the malleable iron, or the raw material for the tyres, into long strips or bars, and these bars are then coiled up into a helix, or volute, and the folds or contact surfaces are rolled or hammered together at a welding heat, for the thorough incorporation of the metallic layers; so that in this way the thickness or transverse section of the tyre is welded into a homogeneous mass throughout, instead of having merely a single weld at one point of the circle. And in combining the details of the improved wheels, the tyres are rolled with longitudinal side flanges on the inner surface, for the reception and holding up of the outer ends of the spokes or wheel arms. The boss of the wheel is of a conical shape, and the inner ends of the spokes are correspondingly bevilled, so that, when the latter are laid round the nave, the cone is drawn up laterally by means of a plate on the wheel face, fitted with adjusting bolts, and the cone action then forces out all the arms or wheel spokes in a radial direction, bringing their outer ends to bear hard up against the interior surface of the tyre, and binding the wheel into a solid mass. The spokes may either be of iron or wood, or other material, and they may be arranged to produce a wheel either solid, or nearly so, or open-spoked. When wood is adopted for the spokes, the pieces are first suspended over boiling tar, or bitumen, and so as to be subjected to the effect of the ascending vapor, which acts as an excellent preservative against decay from chemical causes; or, instead of this system of treatment, the wood may be boiled in a composition of red lead and bitumen.

In faggoting up the improved axles, the separate pieces, out of which the required solid axle is to be produced, are individually rolled or shaped with a species of duplex or other incline of a like character; so that when the pieces are laid together, they dovetail or combine with each other, in such manner, that, when rolled or laid under the hammer, the rolling or hammer action forcibly combines all the contiguous or contact surfaces together, and effects a good metallic binding down to the centre of the incorporated mass. This is the system of construction to be followed in the manufacture of solid axles; but hollow axles are made in the same manner, modified only as regards the leaving a tubular centre in the mass.

Safety Apparatus for Steam Boilers.—E. Walmsley, *Heaton Norris.*—This invention has in view the prevention of steam-boiler accidents, caused by a scarcity of water. This object is effected by causing the water in the boiler to issue out upon, and extinguish the fire when the level falls below the proper point. A pipe conveys the water from the interior of the boiler to a spout or rose in front of or above the fire, and a valve fitted on the inner end of this pipe is worked by a lever connected to a float, so that, as the water-level falls, the float falls with it and opens the valve. At first the valve will open to a slight extent, allowing but little water to issue. This will serve to attract the notice of the attendant; and to aid this, a small opening should be made in the bend of the pipe outside the boiler, so that the water may be seen to issue. If attention is paid to this signal, and a supply of feed-water be admitted into the boiler, the valve will speedily

be closed, owing to the ascent of the float as the water-level rises; but should no notice be taken of the indication of danger, the further fall of the water-level will cause the valve to open still further, until a powerful jet of water is, by the steam pressure, ejected over the fire, rapidly extinguishing it, and preventing any serious results.

ORNAMENTAL FABRICS.—J. LYLE, *Glasgow*.—This invention relates to the manufacture of figured or ornamental fabrics, for carpeting, tapestry, and other goods, as well as chenille, whereby all the necessary colors to be used in weaving a given fabric are applied by means of a single shuttle, instead of using a reduplication of that apparatus, as hitherto employed in manufactures of this nature.

In manufacturing ornamental fabrics according to this general process, the weaver, having his pattern or device drawn out on paper in the usual way, reads off each color as it appears in the length of the piece, and then assigns to each portion so much of the figuring weft as will produce that particular extent of color in the woven piece. For example, if he starts with three lines of blue, he measures, by a predetermined standard, so much of his blue figure weft as will weave up into these three lines in the piece. This length of blue weft is then wound upon a reel or other holder; and if the succeeding color is a red, as much of a red-colored weft is taken as will weave into the number of red lines at that part of the figure, and this red length is then tied or attached to the preceding blue length. This process is continued throughout the entire series of colors in the length of the figure, until the necessary parti-colored chain of weft is made up. The shuttle is then supplied with this weft, by means of pirns wound up from the chain. This reduces the ornamental weaving to the simplicity of plain weaving, as only one shuttle is used in weaving a piece of cloth, whatever number of colors there may be in the pattern or ornamental figure, each link or length of colored weft in the chain being brought into use at the proper time, by the simple process of unwinding from the pirn of the shuttle, just as it would be by means of the complex "drop-box" and an entire change of shuttle. The fabrics so woven may either be used simply as carpets or tapestry of the ordinary kind, or they may be cut up for the purpose of making chenille.

BLEACHING AND SCOURING.—J. HIGGIN, *Manchester*.—Mr. Higgin's invention consists in the use of a new compound or mixture, to be used in the operation technically known as bowking and kiering, instead of, or in connection with, the ordinary process of boiling in a solution of soda-ash, or a solution of resin in soda-ash. The cloth or yarn to be bleached or scoured, to the amount of 3500 lbs. weight, for example, after being singed and washed in the ordinary manner, is folded into a kier, during which operation milk of lime is thrown over it; or the cloth or yarn prior to entering the kier, may be padded by or passed through the lime, so as to absorb it equally. A sufficient quantity of water is then added, and from one to two gallons of a solution of chloride of lime. Steam is then turned on, and the liquor is kept boiling about fourteen hours, after which the cloth or yarn is removed, washed in water, and steeped in or passed through dilute sulphuric or muriatic acid. On leaving this solution, the material is washed in water and folded into a kier, into which has previously been put the following mixture:—In an iron or other vessel are put 30 gallons of water, 120 lbs. soda-ash, and 80 lbs. American resin, gum-thus, or any other cheap and efficient resin. This compound is boiled for eight hours by means of injected steam, and 25 lbs. lime, previously slacked to a pasty consistency, are then added to it. This

mixture is boiled six hours, and then transferred to the kier into which the cloth or yarn is folded; sufficient water is then added, and the whole boiled for about fourteen hours. In some cases it is preferable to boil the mixture of resin and soda-ash in water for fourteen hours, then to put it in the kier, and, after adding the slacked lime, boil it for about twenty minutes, after which the cloth or yarn is introduced and boiled. When sufficiently boiled, the cloth must be removed and washed with water, after which it must be steeped in or passed through a dilute solution of chloride of lime. It may now remain wet for a few hours, or it may be immediately passed through dilute sulphuric or muriatic acid, after which it must be washed and dried. In some cases it may be convenient to give the goods a second boil in a kier, with the aforesaid mixture of resin, soda, and lime, but in smaller quantities, or in a solution of resin in soda-ash, or in a solution of soda-ash alone, but for most purposes, the aforesaid process will be found sufficiently effective.

Manufacture of Iron and Steel.—T. W. Dodds, *Rotherham*.—This invention relates to the primary treatment and manufacture of iron and steel from the raw material or metal, and to the application of such manufactured metals, or the steeling or case-hardening process thereof, to special articles of metal manufacture. In making a mass of steel by this process, the operator places the raw unmanufactured material, or wrought-iron, in a chamber or furnace containing a mixture of any suitable carbonaceous matter, as charcoal, by preference, potash, pearl-ash, or other alkaline matter, and carbonate or bicarbonate of lime, as marble chippings, gypsum, oyster-shells, or other matter containing lime. The common kind of furnace may be used for this process, but it is preferred to adopt a plan of furnace wherein a range of retorts is so built and contrived, that the working heat may be kept up uniformly or nearly so, whilst the charging and discharging operations are going on, each retort being drawn in succession, and the treated metal plunged into a wet or dry carbonaceous bath or bed to cool. By the adoption of this system, the furnace is prevented from sustaining injury from rapid heating and cooling, whilst the cost of the process of manufacture is considerably reduced. For the production of a non-oxydisable metal or steel for various uses, a quantity of nickel is incorporated in the metal in any convenient manner. And in the annealing of wrought-iron articles, or articles partially steeled or case-hardened, a bath or compound mass of carbonate of lime and soda, pearl-ash, or potash, is used. This treatment produces a fine soft fibrous metal, and the process is especially valuable for softening the inner non-abrading portions of railway wheel tyres.

Files, Rasps, and Edge-tools.—T. W. Dodds, *Rotherham*.—This invention relates to the manufacture of files, rasps, saws, augers, rose-bits, and other edge or cutting and abrading tools, from the crude or ordinary raw metal, as wrought-iron, or partially converted steel; the articles so shaped being subsequently hardened for use, by placing them in a chamber containing a mixture of carbonaceous matter, as charcoal, by preference, and potash, pearl-ash, soda, or soda-ash, or other alkaline matter; limestone, and carbonate or bicarbonate of lime, as marble chippings, gypsum, oyster-shells, or other matter containing lime, and any material which, being burned, forms animal charcoal. In carrying out this invention, it is proposed to use furnaces of a similar construction to those shown and described in the specification and accompanying drawings of letters patent, granted to Mr. Dodds on the 7th April, 1853; a notice of which will be found in the present Journal.

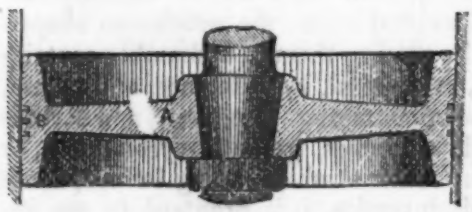
The essential object of this invention is the case-hardening, or converting of files and other tools in a partially manufactured state, from bars partially converted by the use of the process and materials described, or by the use of any other carbonaceous material. By this invention the tools may be made of very high quality, and at a cheaper rate than usual, whilst special varieties of difficult construction are easily formed in this way.

Ornamental Fabrics.—J. & W. Hood, *Glasgow.*—This invention relates to that part of the manufacture of fabrics of the lappet class, wherein the loose surface threads produced in forming the device are cut from the piece to bring it to the finished state. Any ornamental fabrics may be treated by this process, provided the device, being of the lappet, leaf, or harness class, is made up of spots or regularly-disposed isolated portions of interwoven weft. To accomplish this process, a duplex cutting scissors is used. Such scissors are in each case composed of a central stationary blade, with a cutting edge on each side, and two other side blades, with a single cutting edge on the inside of each blade, to work in contact with the two edges of the central blade. A number of such scissors are fixed in a frame in positions corresponding to the pattern to be operated upon, and the fabric is traversed beneath the series, and directed so that the scissors shall cut each end of the loose surface or waste threads, leaving the spots or devices standing in their finished condition. Instead of three blades in the scissors, the same effect may be produced with two blades cutting vertically, each blade having two cutting edges, so as to sever each side at the same time. Such system of treatment or manufacture does away entirely with the necessity for hand-cutting with scissors, and effects great economy in the production of the finished fabrics.

Ventilating Case for Millstones.—Charles Lowe, *Atherstone.*—The object of Mr. Lowe's contrivance is the removal of the vapor and moisture generated in the grinding action of millstones. In ordinary arrangements, the vapor, which the heat of grinding brings out, does not readily descend through the spouts, and owing to the centrifugal force given to it by the runner, it cannot escape over the back of the stone. Hence it condenses and forms a paste in the case and spouts. Mr. Lowe obviates the evil by using a skeleton or ventilating case, covered with bolting cloth, that will retain the flour and allow the heated air and moisture to escape. The effect of this modification is further assisted by covering the spouts in a similar manner.

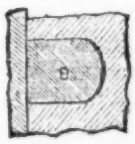
Ramsbottom's Improved Steam Piston.—Mr. John Ramsbottom, of Manchester, has lately introduced a novel form of piston and packing, which has been successfully tried in several locomotive-engines. Our engraving, fig. 1, is a section of the new piston, and fig. 2 is a section of one of the packing rings drawn full size. The piston consists of a single casting, A, without cover, bolts, or nuts, and is fixed upon a conical part of the piston-rod by a nut. Three separate grooves, each $\frac{1}{4}$ in. wide, $\frac{1}{4}$ in. apart, and 5-16 deep, are turned in the circumference, and these grooves are fitted with elastic packing rings, B. These rings, which may be made of brass, steel, or iron, are drawn of a suitable section to fit the grooves in the piston, and are bent in rollers to the proper curvature, the diameter of the circle to which they are bent being about one tenth larger

Fig. 1.



than the cylinder. They are placed in the grooves in a compressed state, and, along with the body of the piston, are thus put into the cylinder, care being taken to block the steam-port, so as to prevent the rings from getting into it. The rings are forced outward by their own elasticity, which is found quite sufficient to keep them steam-tight. The joints of the rings are placed in some part of the lower half of the cylinder, so as to break joint. The body of the piston, resting as it does upon the bottom of the cylinder, prevents the steam getting at them; should it, however, by any chance pass the joint of the first ring, it is all but impossible for the solid part of the piston to be so far out of contact as to allow access to the second, and, of course, still more so to the third joint. It is now sixteen months since the first pair of these pistons were put to work, and others have since been made to the number of thirty pairs, the whole of which are realizing all that could be desired. One piston has been at work fifteen months, and has run a distance of 19,650 miles. A set of rings will run from 3000 to 4000 miles, and cost, when new, about 2s. 6d.; so that, in examining and cleaning a piston, the renewal of the packing is of little more consideration, so far as cost is concerned, than if the piston were hemp-packed. A careful average of the consumption of the fifteen engines which were first fitted with these pistons, and which have since run intervals of time varying from four to sixteen months, and an aggregate distance of 269,800 miles, shows a reduction, when compared with the duty of the same engines for four years previous to these pistons being put in, of 5·7 lbs. per mile; a result which has been carefully arrived at, and which goes to show that this piston, either from greater average tightness, or reduced friction, or both combined, is greatly superior to those which it has superseded.

Fig. 2.



RECENT AMERICAN PATENTS.

Brush for Washing Bottles.—This invention consists in a rectangular-shaped folding-brush, having three sides formed of solid strips and set with brushes, by which the top, sides, and bottoms of bottles, etc., are cleansed by a single operation. By A. H. Rauch, Bethlehem, Pa.

Machine for Cleaning and Watering Streets.—The nature of this invention consists in deposing the dirt thrown up by the movement of a rotary-sweeper in a chamber in the rear portion of the machine, by means of a draught created by a revolving fan or blower, the sweeper and fan being operated through suitable gearing by the forward movement of the rear wheels of the machine, and also in using, in connection with the fan and sweeper, an apparatus for distributing water, forming by the combination a machine that effectually cleans and waters the streets, and removes the dust, without annoyance to the neighboring residents and passers-by. The service is performed by means of a rotary-sweeper beneath the machine, combined with a fan revolving at high speed in an external chamber, which is connected by passages with the chamber which first receives the dust and the chamber of deposit, by which arrangement the dust is driven within the action of the fan by the sweeper, and is by suction drawn to the fan-chamber, where it is driven to the chamber, and there deposited; the air in passing out under

strong pressure through the finer reticulations, in the cover of said chamber. By Ross Deegan, of New-York.

Improvement in Steam-Generators.—This boiler is composed of a continuous pipe, which is surrounded by a fire-box which answers to form the furnace, and contains water similar to the fire-box of a locomotive-boiler. This pipe commences at the bottom with one pipe being connected by turns alternately at the ends, thus forming a continuous pipe for some distance up, then it divides into two pipes, then ascending some distance, as before, it divides into four pipes, and thus it can be carried to any extent by any number of divisions. The object of this improvement is to shorten the length of the pipes through which the steam is generated, and at the same time increase the capacity of the pipe at every division, for the purpose of allowing the steam-room to expand as it is generated. The difficulty in using coils of this kind heretofore has been the great length and the numerous turns it has to make, and this is obviated by this improvement. By A. B. Latta, Cincinnati, Ohio.

Improvements in Feathering Paddle-Wheels.—The nature of this invention consists in the bowing or arching of the shanks within the interior of the hub, or so many of them as may be necessary, so as to secure the many advantages of the solid or connected shanks through the hub, with double blades standing at right angles with each other, and at the same time allow them to turn to feather the blades, in connection with the compactness and utility of having the paddles all arranged in the same transverse line in the hub or socket flanges, and also in a guide for reversing the feathering of the paddles, whenever the motion of the wheel is reversed, by a very small movement in the direction of the axis or shaft, instead of, as has been done, by turning the frame of the guides around the wheel beyond the extremities of the blades.

The object of arching the shanks of the paddles, it will be seen, is to enable them to be passed entirely through the hub, and in the same transverse line, thereby greatly reducing the amount of turning and friction in feathering the blades; for when two blades are connected to the opposite extremity of the same shank at right angles, the motion and amount of friction is one half less than when the paddles are arranged and connected to separate shanks, which do not pass through the hub, and consequently not permanen at right angles. By Thomas Champion and Samuel Champion, of Washington, D. C.

Improvement in Seed-Planters.—This invention relates to that class of machines which are operated without the use of horses, and which are carried, instead of being trundled over the ground, and consists in vibrating the seeding-bar, by the motion of the leg of the operator in the act of walking, by means of a rod attached to the leg, and a bell-crank lever, attached thereto and to the seeding-bar, or other equivalent means. By Waitman Davis, Morgantown, Va.

Improved Lathe.—This improvement consists of two systems of cutters or knives acting in different directions at one and the same time; one forming a perfect cylinder, and the other leading it out or forming any desired figure or moulding thereon, according to a pattern designed, and these acting in combination with certain rests adapted by differently-sized bushings to suit the various diameters required. By Harrison O. Clark, Worcester, Mass.

IMPROVEMENT IN CARRIAGES.—This improvement is principally adapted to light vehicles—such as four-wheeled buggies. Instead of making the reach of the carriage of wood or iron, without spring, the entire reach is made of a spring, and this spring is so connected with the front axle as to form a swivel-joint, by which a number of parts, bolts, screws, nuts, etc., are dispensed with, and the cost very materially reduced. By James L. Rolwey, Steuben Co., Ind.

IMPROVEMENT IN HARVESTERS.—The double-edged shear-blades or cutters, operated by the driving-wheel, which communicates a reciprocating motion to the bars to which the blades are pivoted, cut the grain, which then falls upon the platform; the reciprocating rake advancing, with its teeth elevated, clears the platform of the cut grain, and deposits it in bundles on the ground, at the side of the machine, ready for the binder, and then returns, with the teeth depressed, to repeat the operation. By Ira Reynolds, Republic, Ohio.

IMPROVED PROCESS IN TREATMENT OF PAINT.—The pigments employed for this purpose are such as are ordinarily found in market in the dry state, and they are finely mixed. The albumen employed is incoagulated, and such as is usually found in commerce in a dried state; it is also pulverized finely. The dry pigment and albumen are mixed in due proportions, and put up in papers, kegs, or any other suitable manner, and may be kept for years if preserved from moisture. At any time that the paint is required, it is only necessary to mix the composition of pigment and albumen in a suitable quantity of soft water, which should stand long enough for the albumen to be dissolved; the whole should be then thoroughly stirred up, when it is ready to be spread by a brush over the surface to be coated with it. After the paint is applied and has time to dry, it should be treated by some substance which will neither decompose nor bleach the pigment, nor stain either the pigment or albumen, but which will coagulate the latter. A jet of steam is very effective for this purpose, but washing the surface with alcohol will accomplish the object very satisfactorily. After the albumen has been in any manner coagulated, it must be suffered to become dry and hard before it is again disturbed. The surface presented by paint thus treated is *flat*, but it may, if desired, be varnished to give it a gloss. The proportions of albumen required for different kinds of pigments vary very much. By Gabriel Bloudin, New-York.

IMPROVEMENT IN PAINT-COMPOSITION.—This is claimed to be a security against the action of water or alkaline solutions usually employed in cleaning painted surfaces. The inventor says: "To effect this result, I mix the pigments with albumen, which is, in its primitive state, soluble in water, but becomes insoluble when coagulated. The proportion of albumen will vary with different coloring substances; as, for instance, those of which the form of the particle is crystalline, are more readily fixed than those of a globular form, and less albumen would be required." By Gabriel Bloudin, New-York.

IMPROVEMENT IN WEAVING DOUBLE CLOTH.—This relates to a class of fabrics which are suitable to be printed upon one side, such as carpets, etc., in which only one side is exposed to view when in use. Any ordinary loom can be used for weaving this fabric if it has four harnesses, and is capable of using two shuttles and two warp-beams. In one of the shuttles, filling-thread of cotton or linen is used, and in the other a thread of woollen. Into two of

the harnesses cotton or linen warps are drawn, and into the other two, woollen warps. Numbers one and two contain woollen or worsted warps; numbers three and four, cotton or linen warps.

First. Raise the first and third harness, depress the second and fourth, then throw in cotton or linen filling.

Second. Raise the first and depress the second, third, and fourth, then throw in wool-filling.

Third. Raise the second and fourth, depress the first and third, then throw cotton or linen filling.

Fourth. Raise the second, depress the first, third, and fourth, then throw woollen filling.

This operation produces a fabric which has a surface of wool upon one side, and of cotton or linen upon the other side, which surfaces are interwoven into each other in the middle. By Samuel Fay, Lowell, Mass.

Improved Burglars' Alarm.—This invention consists in attaching to a door or window a fastener of peculiar construction, and a hammer-dog and spring, so arranged that the hammer will be liberated and thrown down upon a percussion-cap by the action of the spring when the door or window is tried, or an attempt is made to open it. By Duncan E. McDonald, Springfield, Mass.

Improved Method of Turning Casks, etc., from Solid Pieces.—This improvement consists in cutting the bodies of barrels out of blocks of wood without injuring the cores, by means of longitudinal knives, connected with cross-heads, and fed by screws. By this improvement the bodies of barrels are turned in one piece from the solid blocks, whereby they can be produced in a superior manner than made from staves and put together. There is no wasting of material, since by putting on a sufficient number of tool-bearers and cutters, can be produced several barrels, or tubs, one within another, each of a smaller size, at one operation. After the bodies of the barrels are thus turned, and the chines cut, the heads are fitted in the usual manner. By James P. Osborn, Staunton, N. J.

Poisonous Colored Confectionery.—The *Lancet* commissioners, in reporting the result of their investigations respecting colored confectionery, express their surprise at the extent to which deadly and virulent poisons are daily made use of by the manufacturers of those articles. One hundred and one samples were analyzed; and of the yellows, seventy contained chromate of lead and colored gamboge; seventy-nine of the reds contained cochineal, red lead, and bi-sulphuret of mercury; eight of the browns contained ferruginous earths, either vandyke-brown, umber, or sienna; two of the purples contained Prussian-blue and cochineal; thirty-eight of the blues contained indigo, Prussian-blue, Antwerp-blue, and a sulphuret of sodium or aluminum; nineteen of the greens contained Brunswick-greens, consisting of a mixture of chromate of lead and Prussian-blue, verditer or carbonate of copper, Scheele's green or arsenite of copper. The above colors were variously combined in different cases, three and even four poisons occurring in the same parcel of confectionery. In four of the samples the colors were painted on with white lead or carbonate of lead; thirteen of the samples were adulterated with hydrated sulphate of lime; seventeen samples were adulterated with wheat flour, three with potato flour, and one with arrowroot.

EDITORS' JOTTINGS AND MECHANICAL RECORD.

MUSICAL—GRISI AND MARIO.—"The Queen of Song!" this has been long applied to the great artiste whose name we have here recorded, by the most competent judges in the world. Who shall gainsay it? By the same decree, Mario has been pronounced her most fit associate. They have now come into our community, and our wiseacres can see in them a host of imperfections, which, if they exist as represented, reduce them at least to second-rate performers. If they do not mean this, why do they expend so much *learning* in describing defects? It is admitted that they must have been great once, but they are now nearly forty years old! Well, reader, are you about forty years old, and do you begin to experience the tremors of age, and the weaknesses and infirmities of threescore and ten years? We have always heard that this was just the period of a man's maturity. But let this pass. Some men do begin to fade quite early. Probably these artistes have not the youthful elasticity and freshness of their earlier life, and probably this is all they have lost.

We have heard them in Norma, said to be Grisi's greatest character. Certainly she is a great actress. For queenly dignity, for deep, hearty passion, for intense emotion, most naturally represented, we have never listened to any scene to compare with several in this remarkable performance. Grisi is by far the best tragic actress we have ever seen.

But her music? Ask her world-wide reputation—her reputation of the present and the recent past; and if the question is repeated, we should be inclined to inquire, What do you think of the poetic merits of Homer's Iliad or Paradise Lost? The merits of these may as well be questioned as of the other. But wherein does her merit consist? This is a fair question, but not always easy to answer. We answer, partially, as follows: Sometimes it consists in a peculiar combination, rather than in any given particular. But she has a voice of great compass, remarkable cultivation, and more than ordinary power. She occasionally exhibits far more of this last quality than she does in her current style. Her trill is faultless, her soft notes are clear and distinct as those of a flute. We have heard, perhaps from more than one artiste, a note more perfect in itself than hers. Perhaps, as was said of Jenny Lind, the first few notes may disappoint you. But for efficiency—taking the singing and the acting in high tragedy, as one of our dailies has it, "she is incomparable." We have had nothing like it in this country.

Mario is quite competent to be her associate. His voice possesses wonderful compass, is under perfect cultivation, of excellent tone, with remarkable power, in occasional passages, and withal, he is a fair actor.

In person both are above the usual height, both well formed, of good features and expression, and very graceful in manner. Nothing like stiffness or formality appears in either.

During the performance of Norma, the audience were more completely under the control of the stage than we have ever before witnessed. We do not remember the occasion when four or five thousand persons were held so long in such perfect stillness, as during those three and a half hours.

The minor parts are well sustained. Susini, the base, is a capital voice, and discourses capital music. Miss Donovan, (Adalgisa,) is quite an accomplished performer. The chorus is good, better than we have often heard. The orchestra, led by Arditi, is very creditable.

It should be borne in mind that Castle Garden is a horrible place for musical effect. Its huge dimensions, numerous recesses, deep gallery, and perhaps the nature of its walls, combine to test the voice and instruments to the greatest extent. Their powers are now (in October) to be tested in the new Opera House, in Fourteenth street.

BUTTER FOR SALE.—In one week, ending Sept. 15th, there arrived in Boston by railroads, 356 tons of butter.

THE NEW ORGAN AT THE TREMONT TEMPLE.—All good works of art deserve a careful notice, and hence we give place to the following from the *Boston Traveller:*

"The new organ in the Tremont Temple was exhibited last evening, to the evident satisfaction of a large audience. It is from the manufactory of Messrs. E. & G. G. Hook, of this city, and is much the largest and most comprehensive organ ever built in this country, being, we believe, nearly as large as the celebrated organ at Birmingham. It consists of four complete manuals, extending from CC to A in alt., and an *independent pedal organ*, from CCC to D. It fills a space at one end of the hall, 50 feet in height and 50 feet in width, being concealed from view by an open-work screen. There are 15 stops in the great organ, 15 in the swell, 10 in the choir, 16 in the pedal, 6 in the solo, and 14 couplers, making, in all, 70 registers, 56 of which are *sounding stops*. This, we believe, is 12 more than are in any other organ in America. As far as we are enabled to judge from last evening's observation, the *voicing* of the pipes and reeds throughout the instrument is remarkably good, and the stops seem to *blend* very finely, no single one being too prominent. The *swell organ* is exceedingly effective; we rarely have heard such *crescendos* and *diminuendos*. The distinguishing features of this organ may be mentioned in a few words, as follows: 1. Its unusual *size*. 2. Its *independent pedal organ*, which is decidedly the largest and most complete in America, and is probably surpassed by few, if any, in Europe. 3. Its *solo-manual*, which is very rare in any country. 4. The very large and unusual number of couplers. We think this instrument will, in some respects, compare favorably with the large organs of England and the Continent. The *mixed* and *reed* stops throughout are very brilliant; but, as is the case in most American organs, the *diapasons*, which are by far the most important stops of an organ, and which form the *foundation*, as it were, of the whole instrument, are *thin*, and will bear no comparison to the deep-toned diapasons of European organs. We imagine that this general inferiority of American diapasons comes from the inferior metal used. People will not pay enough to enable builders to use the proper kind. All things considered, we think the Messrs. Hook may justly congratulate themselves on having produced an organ that will compare *well* with any in the country. Many distinguished organists from this and neighboring cities performed upon the organ last evening, but as their object was principally to show the *organ*, and not *themselves*, we will not attempt to criticise them individually. We can not help remarking, however, *en passant*, that one can not be too severely censured for perverting this most noble of all musical instruments with such melodies as 'My lodging is on the cold ground,' and others which were introduced last evening. Mr. Zundel, of New-York, can always be relied upon. He gave us some variations by Rink, and a fugue by Bach, in true organ style. Mr. Wilcox is perfectly at home in *showing off* an organ, and he never did it better than last evening."

CLOCK MANUFACTURES.—The *New-York Tribune*, in speaking of the latest Yankee clock ingenuity, says that it has seen one just manufactured, that measures time as the hours are counted in Japan, the hands making a diurnal revolution in twelve Chinese hours. From it we gather, also, the following interesting statistics:

Mayor Jerome, of New-Haven, has been successful in securing a ten per cent reduction of duty on American clocks shipped to England.

The superior beauty and cheapness of the American clocks has almost annihilated the German clock trade with England. The town of Bristol, in this State, has 14 clock factories, employs 440 hands, using $334,000 in capital, producing 201,000 finished clocks.

Plymouth, too, has three factories, employs 175 hands, using $150,000 in capital, producing 70,000 clocks.

Litchfield, also, employs 30 hands; capital, $50,000; produce, 3000 clocks.

Ansonia has two factories, employs 140 hands, using $132,000 capital, producing 102,000 clocks.

Southington has two factories, employs 45 hands, using $42,000 capital, producing 14,000 clocks.

Winsted has one factory, employs 40 hands, using $36,000, producing 30,000 clocks.

New-Haven has three factories, employs 405 hands, using $258,000, producing 374,000 clocks.

Total number of hands employed in clock-making in the State, 1279. Total capital, $1,002,000. Total number of clocks, 794,000 per year.

New-York city furnishes about one fourth as many clocks in a year as Connecticut does, and their annual value is $1,500,000.

MACH'NERY IN FARMING: ITS NECESSITY.—It is not enough that farmers avail themselves of all the advantages which chemistry affords in its application to their art; it is not enough that they learn how to save as much as possible of the manures made on their premises, and the best methods of applying these and also purchased specific manures; it is not enough that they know at what seasons and to what depths their soils should be cultivated. They must perform as many of the operations of farming by machinery as machinery can be made to perform to advantage.

There is no other way in which agriculture can keep pace in respectability, pleasure, and profit with the other arts. Without this expedient it will be outstripped by them, and sink steadily in comparative rank.

By machinery, as we use the word here, we mean all mechanical contrivances which can be substituted for manual labor, and combined with manual labor, so as greatly to increase its productiveness.

And the policy which we recommend includes also animal labor as a substitute for human labor, and as a more powerful coöperator with it.

So far as a horse or an ox can be made to do the work of five men, the horse or the ox earns the net product of five men's labor for the employer. If one man cultivates as much corn, and cultivates it as well with one horse, attached to a cultivator, and one man, as his neighbor cultivates with ten hoes in the hands of ten men, it is easy to see which of the two is travelling the faster on the road to wealth.

So in cutting grass, in planting and harvesting corn, and in various other operations of the farm, machines can do the work for a small per centage of the cost of manual labor.

We do not mean that every machine which is invented and offered to the farmers for sale should be purchased by them. Not every attempt to substitute mechanical labor for manual is successful. The large majority of inventions are in some way defective. But in every case where it has been clearly ascertained that the thing is actually done, that a machine has been made, which, at a much smaller cost, will do the work which you are now doing with human hands, buy the machine if you can; and if you have not the means, get them as soon as possible.

It is not a matter of option with farmers whether they will do this or not. To succeed, they have got to do it otherwise it is impossible for them to compete with those who do employ machinery. It is like a man contending single-handed against a thousand, and every one his equal.—*People's Journal.*

HAMPTON'S PEACH.—This new peach was produced in Hardin county, Ohio, from a stone of the Morris-white Rareripe, purchased in New-York city sixteen years ago. The stone did not germinate until the second year, when the produce was a tree of uncommon vigor. It was several years in coming into bearing, but has not disappointed expectations since that period. The fruit is of a very large size. Some specimens have measured eleven and three quarter inches in circumference. It parts freely from its drab stone. In quality it is of the very finest, being very sweet and rich. The time of maturity is the first of September, and ripens gradually for two weeks. The tree is of great vigor, and before it suffered severely (a few years since) from a sleet-storm, the extent of its branches exceeded 29 feet in diameter, the circumference of its body 30 inches, and some of the annual rings exposed by this injury were near an inch in width. It stands in an uncultivated soil. The blossoms of this fruit are small and pale, the leaves finely serrated.

RECIPROCITY TREATY.—The Washington *Union* contains the President's proclamation announcing the ratification of the Canadian Reciprocity Treaty, under which the following articles are admitted from the British Provinces free of all duty:

Grain, flour, and breadstuffs, of all kinds.
Animals of all kinds.
Fresh-smoked, and salted meats.
Cotton-wool, seeds, and vegetables.
Undried fruits, dried fruits.
Fish of all kinds.
Products of fish, and of all other creatures living in the water.
Poultry, eggs.
Hides, furs, skins, or tails undressed.
Stone or marble in its crude or unwrought state
Slate.
Butter, cheese, tallow.
Lard, horns, manures.
Ores of metal, of all kinds.
Coal.
Pitch, tar, turpentine, ashes.
Timber and lumber, of all kinds, round, hewed, and sawed, unmanufactured in whole or in part.
Firewood.
Plants, shrubs, and trees.
Pelts, wool.
Fish-oil.
Rice, broom-corn, and bark.
Gypsum, ground or unground.
Hewn, or wrought, or unwrought burr or grindstones.
Dyestuffs.
Flax, hemp, and tow, unmanufactured.
Unmanufactured tobacco.
Rags.

STATISTICS OF TRADE.—What will our political financiers say of the following facts, which are stated in the journals of the day?

The supply of gold received from California has been inadequate to supply the drain made by the demands of our foreign trade. The shipment of specie from the United States to foreign countries, from the 1st of January to the 2d of September of this year, has been about $36,000,000.

While this drain of specie is going on with such drastic force, the official statements show that the foreign imports at the port of New-York for the month of August of this year exceed the imports for the same month of last year about $3,000,000.

The quantities of goods thrown upon the New-York market during the month of August of the past four years were as follows:

1851,	$6,783,216
1852,	9,684,591
1853,	11,668,731
1854,	14,194,646

It must be manifest to every rational mind, that the increasing population and wants, wealth, and ability of the country, do not require any such rapid increase in the supply of foreign goods.

IRON FOUNDRIES OF PITTSBURG.—There are now in Pittsburg thirty-eight iron foundries, of which nine are almost exclusively employed in the manufacture of steam-engines, and twenty-nine in the manufacture of various kinds of hollow-ware, machinery, etc. The foundries which are employed in the manufacture of steam-engines consume yearly 3200 tons of wrought-iron, 9200 of pig-iron, employ 640 men, and produce 120 steam-engines every year. Their net capital is $540,000.

GREATEST STEAMER IN THE WORLD.—The immense screw and paddle steamer, building by Scott Russell, at Millwall, England, for the Eastern Steam Navigation Company, is to be completed in twelve months. Her keel has been laid down, and several of her bulkheads, or compartments, are raised, and the works are proceeding with energy and expedition. A railroad has been laid down the entire length of her way, to facilitate the conveyance of the materials from the factory to the different parts of the vessel. The exact dimensions of the ship are as follows: Tonnage, builder's measurement, 22,000 tons; tonnage burthen, 10,000 tons; extreme length, 680 feet; extreme breadth, 83 feet; extreme depth, 58 feet; power of engines, (screw and paddle,) 2600 horse. Her engines are in the course of construction, and will be fitted in the vessel before she is floated off. The hull will be entirely of iron, and of more than usual strength, the magnitude of her size enabling Mr. Brunell, the architect, to introduce many precautionary measures conducive to support and security. From her keel up to six feet above the water-line is double, of a cellular construction. The upper deck will also be strengthened on the same principle, and will form a complete beam, similar to the tube of the Britannia Bridge, so that any external injury will not affect the tightness or the safety of the ship. She is divided into ten separate water-tight compartments, each being sixty feet in length, enabling her to take out sufficient fuel for a voyage to Australia and back to England without stopping.

INTERNAL IMPROVEMENT CONVENTION AT NORFOLK.—We are glad to be able to remind our Virginia readers of the great Internal Improvement Convention to be held in Norfolk, on Wednesday, the 8th of November next. The objects of that Convention are set forth in a series of resolutions adopted by a public meeting of the citizens of Norfolk in May last. The first resolution declares that the "cause of internal improvement in this State will be advanced by conference among its friends previous to the meeting of the next General Assembly, and that a full understanding of the course that should be pursued is necessary, to secure to the citizens of Virginia the trade within and beyond our borders, to which they are justly entitled." The second affirms, that "without concert of action and unanimity of purpose on our part, in regulating further appropriations to these works, we can not counteract the efforts that will be made to divert our trade to cities located in other States." The third resolution invites the "coöperation of all sections and parties interested in completing, with the least cost, and in the shortest time, our great lines of railway to the West, in such manner and direction as will inure to the benefit of the State, and to that of our own cities." In suggesting the holding of this Convention, the citizens of Norfolk take occasion to disclaim having any purposes to subserve that are not "common" to the other cities and towns of Virginia—having solely in view the establishment of a system that will be essentially "State" in its character and objects.

WATER IN FILLING UP DEEP BORE-HOLES IN BLASTING OPERATIONS.—In working the great deposit of magnetic iron ore which occurs under peculiar circumstances in the granite at Moravitza, in the Banat, it has been found necessary, in consequence of the hardness of the rock and ore, to use bore-holes from 2 to 2½ inches in diameter, and 36 to 40 inches deep. The packing of such holes with clay being a very tedious operation, Mr. A. Koszt endeavored to substitute water for the clay, with considerable success. One of Bickford's safety-fuses, which burns in water perfectly, is attached to the cartridge and fastened with thread; this cartridge is let down to the bottom of the whole, and about 1½ to 2 inches of clay firmly packed over it, the remainder of the bore, nearly to the top, being filled with water. In the case of very oblique bores, where the pressure of the water upon the bottom was small, he plugged up the orifice of the bore with a plug of wood, driven with considerable force into it, through a slit in which the fuse passed. More recently still he had used instead of a small quantity of clay first introduced, to keep the cartridge from becoming wet, a mixture of tar and pitch, which most effectually preserves the powder from damp. Great numbers of trials have convinced him that the blasts fired with this arrangement lose nothing in force, while there is a great saving of time and consequently of expense.

NEW CONTRIVANCE IN IRONING.—The heating of irons, as we are led to suppose, is often attended with great inconvenience. Sometimes they are too hot, sometimes too cold, sometimes they crock the muslins, etc., etc. A patent has been taken, in England, for heating them by steam. An elastic tube, of requisite length, is connected at one end with a steam-boiler, and at the other end, the iron being hollow, with the interior of the iron. Two tubes may be provided, so as to keep up a constant current of steam through the iron. Much time, now consumed in changing the irons, will be saved by this plan, and there may be also economy in the heating. A very small boiler, in summer, may be substituted for the kitchen grate, and in all cases an ordinary fire will be quite sufficient for keeping the irons hot.

Another advantage is obvious. To prevent an inconvenient degree of heat upon the hand, a double plate, with an air-chamber between, may be arranged above the steam-chamber, and, by the use of a non-conducting handle, all danger of this sort may be entirely obviated.

ENGINES OF THE FRENCH STEAMSHIP BRANDON.—An iron screw-ship has recently arrived at this port from Havre. Her engines are peculiarly constructed. She has two engines, with two steam cylinders for each. She has two tubular boilers of very small dimensions. One engine, a small high-pressure, communicates its steam to the second, which is twice as large. The crank-shaft of each engine acts directly, by gearing, upon the propeller-shaft. The wheels of the two engines are geared to the same pinion, and of course revolve in opposite directions. Both engines weigh but sixty tons, and consume but fifteen and a half tons of fuel per day. She made the passage in sixteen days. She was built on the Clyde.

SCIENCE TURNED PEEVISH.—"An experiment has just been successfully made in France, of employing swallows to carry letters, as pigeons were used some years back."—*Exchange.*

"Foolish operation in these days of the lightning telegraph."—*Scientific American.*

Now, this remark of our neighbor seems to us the most foolish and unscientific that he could have made on the subject. Are not messages to be sent any where except where telegraphs will pay? This is only equalled by that other remark of his, that steam-carriages on common roads are not wanted in this day of railroads. According to this learned editor, all our business, financial and social, is to be done on railroads and by electric telegraphs. He is quite behind or outside the times.

GLASS GLOBES UNSUITABLE FOR FISH.—In the first place, the fish require abundance of air. Now, scarcely any other shape than a globular one contains so much water with so little exposure to the air. Fish, too, require shade, not when we choose to give it to them, but when they feel the want of it; and it need scarcely be observed that all day long a glass globe is in a blaze of light. Still more, the water in the globe must be daily changed, consequently the fish must be lifted out either by hand or a small net; and it is utterly impossible, however careful we may be, to handle or net these delicate little struggling creatures without injuring them, at one time or another.

LIQUID GLUE.—Take 1 kilogramme (or 2 lbs. 8 ozs. 3 dwts. 2 grs. Troy) of Cologne glue, and dissolve it in 1 quart of water in a glazed pot, over a gentle fire, or, better, in the sand-bath, stirring from time to time. When it is all melted, 200 grammes, (6¼ ozs. Troy,) of nitric acid, at 36°, are added, by small quantities at a time. Effervescence takes place, from the disengagement of hyponitric acid. When all the acid has been poured in, the vessel is removed from the fire, and allowed to cool. Glue thus prepared has been kept for upward of two years, in an uncorked bottle, without suffering any change. Liquid glue is very convenient in various chemical operations. Pieces of linen covered with it may be used as a luting for preserving certain cases. It is likewise very useful to cabinet-makers, carpenters, pasteboard-makers, and toy-makers, since it does not require heating.

MULE TRADE OF BOURBON COUNTY, KY.—The Paris (Ky.) *Citizen* gives some statistics of the mule trade of Bourbon county, which show a steady increase both in the demand for and value of these animals. In 1843, according to the assessor's books, there were in the county 1932 mules, valued at $41,343, or an average of $21.31 per head; in 1854, 7436, valued at $562,800, or $7570 per head. The principal markets are the Southern States, where they are used on cotton and sugar plantations. In Virginia they are used on the farm and the road. Baltimore furnishes a large market for the smaller animals, where they are shipped to the West-Indies, to pack coffee from the mountain-plantations. One dealer in Baltimore purchases annually 1000; and another in Richmond, Va., about double that number, one farmer in Bourbon county selling him every year between 500 and 800.

ENGRAVING ON GLASS.—Mr. I. W. Whipple has just patented in several countries, a new mode of engraving or printing on glass, which reproduces rapidly and cheaply upon the surface of glass vessels of any usual form, or even upon ordinary window-glass, any device, motto, landscape, or portrait which may be desired. Measures are in progress to establish a manufactory for the production of glassware thus ornamented. Ordinary glass goblets, whether cylindrical, conical, or hemispherical, are "printed" with equal facility, a goblet being finished complete in from three to ten minutes. It is estimated that one girl will be able to attend to four machines, thus engraving from two to seven dozen per hour.

THE FAIR IN PROVIDENCE.—The exercises of the annual Agricultural Fair commenced in Providence on Wednesday, Sept. 20, and, as we learn from the *Providence Journal*, attracted an immense concourse of people from the surrounding towns. Every thing went off well, and the agricultural part of the exhibition was never finer or more interesting. The chief attractions were a ploughing match, a drawing match, the cattle-show, and the parade of ox-teams. The horticultural department of the exhibition was large and beautiful, notwithstanding the effects of the drought were visible in the diminutive size of the fruit. The exhibition of woollen goods and cloths was more interesting than that of last year, and embraced many rich and elegant specimens of goods.

PERPETUAL MOTION.—Mr. James G. Hendrickson, of Freehold, Monmouth county, N. J., after forty-nine years of patient "whittling," has made a machine that will not only "go of itself," but will compel divers other bodies to which it is attached to go likewise; in short, it has power! "The success is in the direction in which so many have so long labored in vain, namely, by the use of arms and balls attached to a cylinder so as to keep the extra weight always on one side, and therefore to give the cylinder a constant inclination to turn round. The machine requires no starting; take away the blocks, and it goes off 'like a thing of life.' The model was in our office yesterday, and attached to some clockwork, which it turned without once stopping to breathe. We see no reason why it would not go until worn out."—*Journal of Commerce.*

PURIFYING GAS.—The Rev. W. R. Boudich, of Wakefield, England, has obtained a patent for purifying gas, by employing clayey earths, either alone or in combination with lime. The earths so employed are afterward used by farmers for manure. It is well known that aluminous earths possess the quality of absorbing and retaining ammonia; they therefore absorb the ammonia which is set free in the distillation of the coal of which the gas is made, and as ammonia is an excellent fertilizing agent, the products of the gas-works thus become serviceable for raising wheat and corn.

WHAT A MOWING-MACHINE CAN DO.—The *Springfield Republican* states that Captain Samuel Parsons, of Northampton, cut, made, and put into his barns, sixty-two loads of hay during the first week of July, commencing on the 3d, beside mowing for others to the amount of $40 in the same time. The whole was accomplished with what would be equivalent to the labor of one man for thirty-eight days. He mowed in one day, and in less than nine hours, eleven acres, producing from two to two and a half tons per acre.

Railroad Speed.—The Great Western Express to Exeter, England, is made to go at the rate of sixty miles an hour, including stoppages. Supposing the locomotive which draws such a train to have driving-wheels seven feet in diameter, those wheels will revolve five times in a second; the valve moves and the steam escapes ten times in a second; but as there are two cylinders which act alternately, there are really twenty puffs or escapes of steam in a second. Such a locomotive speed is equal to nearly one fourth of that of a cannon-ball, and the momentum of a whole train, moving at such a speed, would be nearly equivalent to the aggregate force of a number of cannon-balls equal to one fourth the weight of the train.—*Banner of Industry.*

Peat for Fuel.—The *Waterbury American* says that two beds of peat have recently been discovered about two miles from that city, and that two joint-stock companies have been formed, with abundant capital, for the purpose of supplying it as a fuel for market.

If the *American* gives this information as a sign of enterprise, we fear he is behind the times. Where we were brought up, men of very small capital do this very thing. Almost every family supplies at least their own wants, and many are ready to supply their neighbors.

Keeping Flowers and Fruit in a Fresh State.—A new process has been discovered for keeping flowers and fruit from decay. This is the process:

Dissolve gum arabic in soft water to the exact point of saturation, and then take a full-blown rose and dip it into the water, and, as soon as the gum is dry, dip again and again, stem and all, and then put it away under glass, or where it will not be touched, and the flowers will remain perfect for a long time.

Fruit treated in the same way will not decay soon, because it is shut up from the atmosphere.

It is almost needless to say that this is a very good way to prepare eggs for long keeping.

Grafts dipped in the gum solution may be carried to California safely.

Curious English Statistics.—It appears by the returns, that there are in England 3,391,271 integral families, and 1,178,559 which have prematurely lost the husband or wife. The number of widows is 795,590, of widowers only 382,969. Between the ages of 25–30, two per cent of the women are widows; 30–35, four per cent; 35–40, seven per cent; 40–45, ten per cent. At 65, the number of widows exceeds the number of wives. At the age of 80 and upward, of 100 women, 75 are widows, 13 are unmarried, and 12 wives. Of every 100 men of 20 years or upward, 31 are bachelors; and of every 100 women of 20 years or upward, 29 are spinsters. Not more than 20 in 100 families are childless.

Another Wonderful Mathematician.—A girl between eight and nine years of age, living at Ayrshire, and attending the Hastings school, is a perfect wonder. She has studied arithmetic but a year, but can tell in a few moments, by mental calculation, the number of seconds in any number of years, 60, 80, or 100, etc., multiply or divide by two numbers, as 32, 68, etc., by short division. She multiplied 123456789 by 987654321, and gave the correct answer in less than a minute. She is the daughter of a shoemaker in Darvel.

Wonderful Patent.—The *Scientific American* details seriously, as if in approval, of a "machine for sawing cord-wood," which consists of quite a system of mechanic contrivances, and fly-wheels, etc., all of which, having no power, are to be put in motion by the wood-sawyer, beside sawing the wood. The saw is a common wood-saw, sometimes called a bow or frame-saw. What does all this mean? Perhaps he was the patent-agent, and knows all about it. We should like to know what possible benefit it can be.

Clothing Business.—The clothing business of Boston amounts to twelve or fifteen million dollars annually. There are four houses which give employment, directly or indirectly, to about five thousand persons each, scattered throughout the New-England States, in most of which they have agencies.

Novel Smoothing-Irons.—Mr. John Kingsland, of Alleghany City, Pa., has patents for two smoothing-irons. One is self-heating, and has been already described in this journal. It is hollow, with a draft, for the purpose of burning charcoal. The other is also hollow, and is furnished with a piece of iron fitted to it, to be heated in the grate or elsewhere, and then inserted in its place. This heater is open at the centre, forming also a draft; so that placing it on a fire does not tend to put it out, but rather to increase its intensity, by forming a short chimney for the passage of its hot current. Both are well worth attention.

Breckenridge and Cannel Coal Company.—We learn that this company are progressing with their enterprise with extraordinary energy. Four hundred men are at work. The company have all the means on hand to complete the works, and it is confidently anticipated that they will be enabled to deliver coal by the first of December. The superiority of this coal, says an exchange, will bring it into general use at once.

The Crops in England and Ireland.—The late English papers all speak of fine weather and abundant harvests throughout the whole of that country. The corn and wheat especially are represented as unusually fine, and in many places the latter was being cut. Oats and hay, too, would yield largely, and the only complaint is of the potato-rot, but this is far from general or very serious.

Connecticut Wine.—Mr. Ansel Martin, of Norwich, Conn., has about five hundred gallons of wine, made from the native grape. He carries on the manufacture quite extensively, his presses and other apparatus being all of his own invention. He says there is no more need of importing wine than there is of importing cider, and that there might be an abundance of a splendid home article, if the farmers would only give some attention to the subject.

The Concord Grape.—E. W. Ball, Esq., of Concord, Mass., has originated, it is said, within a year or two, a new seedling-grape, which is highly spoken of. We have not seen it, and therefore can not judge of its merits. We should like to know more of it.

Kaolin.—A bed of this valuable clay was discovered in New-Jersey, at West-Milford, some time since, but its qualities were then unknown. It has recently been tested, and is found a valuable kaolin. It is of various colors, white, red, chocolate, etc.

Dr. William Terrill, of Sparta, has given to the Georgia State University at Athens, the munificent sum of $20,000, to endow a professorship of Agriculture. In pursuance of the donor's wishes, the Professor of Agriculture is to give a free course of lectures each year.

Erratum.—In our notice of Messrs. Woodward & Brown's manufactory of piano-fortes, we were made to say "a toning-machine," instead of "a boring-machine," as we intended.

NEW BOOKS.

THE PRACTICAL MECHANIC'S JOURNAL.

Nos. 4 and 5 of Vol. 7 are received, and fully sustain us in the commendation we gave two months since of the work, in a notice of the previous numbers. It is a capital work, superior to any thing we know of in this country. To this we are indebted for our account of "recent English patents," in the preceding pages. It is published monthly in Glasgow. The American agents are Stringer & Townsend, 222 Broadway. Price $3 a year.

THE TENT AND THE ALTAR; or, Sketches from Patriarchal Life. By Rev. JOHN CUMMING, D.D., F.R.S.E., etc. Boston: John P. Jewett & Co. 1854.

IN this excellent volume twenty-two topics are presented, in separate chapters, illustrating the different phases of religion in the time of the patriarchs. The scenes, each of them, is portrayed with a very powerful pen. "Each patriarch lived for us. His voice is borne on the winds and waves of time to us." This book is one of the prominent instrumentalities by which this is accomplished. Few writers have done more to impart a thrilling interest to these lessons than Dr. Cumming.

VOICES OF THE DAY. By Rev. JOHN CUMMING, D.D., etc. Boston: John P. Jewett & Co. 1854.

THIS is intended as a companion of "The Voices of the Night," (which we have not seen,) and relates to the future, "the 'night' being far spent and the 'day' at hand." The first chapter is "The dawn of day," and the last, the 16th, "The coming of Elijah." The wonderful power of the writer is exhibited in this as in the volumes we have previously noticed. He is, beyond dispute, *the* religious author, in this department of literature, of the present day.

ARITHMETICAL ANALYSIS; or, Higher Mental Arithmetic for Advanced Classes. By JAMES B. THOMPSON, LL.D. New-York: Ivison & Phinney. 1854.

DR. THOMPSON is the author of several school books of a high order, but we doubt whether any man can do a more useful service, in this sphere, than to prepare a good mental arithmetic. Exercises of this kind do more to direct the mind and bring out principles even than geometry as it was taught in our colleges twenty or thirty years ago. This service he has done in this little book. The plan is well arranged, well explained and illustrated, and the whole forms a foundation for further developments and higher processes which is invaluable.

GRECIAN AND ROMAN MYTHOLOGY. By M. A. DWIGHT. 2d abridged edition. New-York: A. S. Barnes & Co. 1854. 12mo, 314 pp.

THIS work fills a blank space which has proved very inconvenient, especially to readers of the classics. It contains 34 engraved illustrations. The author has done his work in a very able manner. The introduction is also valuable, containing an account of the origin of mythology, and its progress onward toward the true historic period. For schools and families this work will be of especial value. No other, within our knowledge, supplies its place.

WM. HALL & SON.—Reader, can you "perform" *Old Hundred?* Are you very sure? Please try a copy, arranged by W. V. WALLACE, and "ten to one" you will find your match. But it is perfectly beautiful, and therefore will pay for the labor bestowed on it.

La Belle Brunette Polka, brillante, by JOHN PRIDHAM; *Youth is life's time of May*, a romance, by HENRY C. WATSON; and *Our Wild Woodland Home*, vocal duett, written by HARCOURT RUSSELL, composed by LOUIS SPOHR, and very beautiful; all are well worth your attention.

List of Patents Issued

FROM AUGUST 8 TO SEPT. 5.

Robert Arthur, Washington, improvement in closing the mouths of bottles, etc., air-tight.

John A. Bradshaw, Lowell, improvement in machine for pegging boots and shoes.

Wm. Brooke, Jersey City, improvement in gas-moulds.

John H. Cahill, Philadelphia, improvement in hot-air ranges and side-ovens.

Mathias P. Coons, Brooklyn, improvement in railroad car brakes.

Aaron D. Crane, Newark, N. J., improvement in machines for turning irregular forms.

D. M. Cummings, Enfield, N. H., improvement in rakes.

B. Franklin Day, Philadelphia, improved hand-press.

Cook Darling, Utica, improved mode of securing hubs to axles.

Aaron L. Dennison, Roxbury, improvement in punches and dies for punching watch-hands.

Joshua Gibbs, Canton, Ohio, improvement in ploughs.

Joseph Harris, Jr., Boston, Mass., improvement in lamps.

Albert H. Judd, St. Louis, improved safety apparatus for steam-boilers.

J. L. Lord, Chester, Conn., improved grindstone-frame.

Thos. G. McLaughlin, Philadelphia, improvement in railroad car brakes.

Jacob Myers, Powhattan Point, Ohio, improvement in harrows.

Robert Neish, New-York, improvement in lime-kilns.

Andrew Patrick, Alleghany County, Md., improved mode of unloading coal and other cars.

Sylvester H. Roper, Worcester, improvement in sewing-machines.

Jacob C. Robie, Binghamton, improvement in turn-tables.

O. S. Reynolds, Dover, N. H., improvement in machines for cutting irregular forms.

Chas. G. Sargent, Lowell, improvement in machines for combing wool.

Geo. Spencer, Utica, improvement in railroad car windows.

Wm. A. Sweet, Pompey, N. Y., improvement in fire-arms.

J. S. White and L. P. Walt, Waterloo, S. C., improvement in seed-planter.

Moses D. Wells, Morgantown, Va., improvement in horse-rakes.

Timothy W. Webb, Jersey City, improvement in insulators for lightning-rods.

W. A. White, Roxbury, improved process of printing long-napped fabrics.

A. S. Wright, San Francisco, Cal., improvement in gold-amalgamator.

Wm. Kidder, Newburyport, assignor to Wm. Kidder and Nehemiah Hunt, Boston, improvement in machines for pegging boots and shoes.

Henry H. Beach, Chicago, improvement in winnowers.

Wm. D. Andrews, New-York, improved centrifugal pump.

Nathaniel A. Boynton, New-York, improvement in hot-air furnaces.

Richard C. Bristol, China, Mich., improvement in rotary-engines.

Benj. Bridendolph, Clearspring, Md., improvement in hominy-mills.

Absalom B. Earle, Franklin, N.Y., improvement in straw-cutters.

Wm. M. Ellis, Washington, D. C., improved arrangement of the steam-engine.

Wm. Z. Hatcher, Philadelphia, improved stop and waste-cocks.

Levi Haywood, Joseph L. Ross, and Jas. K. Otis, Boston, improvement in portable bureaus.

J. Burrows Hyde, New-York, improvement in apparatus for coating telegraph-wires.

Bernard Hughes, Rochester, improvement in actuating engines by bi-sulphate of carbon.

Geo. Jackson, Cohoes, improvement in knitting-machines.

Abel F. Lewis, Shopiere, Wis., improvement in floating-drags, or anchors.

Robert Marquis, Xenia, Ohio, apparatus for balancing and hoisting sashes.

Elbridge Marshall, Blinton, N. J., improvement in manure-spreaders.

Henry Mellish, Walpole, N. H., improvement in grain-mills.

Julius A. Pease, New-York, improved diaphragm pump.

Wm. D. Porter, New-York, improvements in wood gas generators.

Henry Richardson, Sheldon Morris, Jr., and Bennet C. Peroy, Litchfield, Ct., improvement in folding umbrellas.

Artemus Rogers, Painsville, Ohio, improved instrument for manufacturing door-knobs.

Charles M. Alburger, Philadelphia, improved pavement-washer, hose-hydrant, and hitching-post.

Thomas Crossly, Boston, improvement in manufacturing two-ply carpets.

Jos. Hill, Skaneateles, improved daguerreotype plate holder.

Jos. C. Jenkins, Bealsville, Ohio, improvement in tuning forks.

Abner White Jones, New-York, improved means of preventing the explosion of boilers.

Dustin F. Mellin, Wentworth, N. H., machine for sawing clapboards, etc.

Wm. O. Rust, Great Falls, N. H., improved saw-set.

Hugh Sangster, Buffalo, improvement in securing glasses in lanterns.

Edmund Shaw, East-Abington, Mass., improvement in sewing-machines.

Halcyon Skinner and Wm. Greenhaigh, West-Farms, N. Y., improved carpenters' guage.

Robert Spencer, Southport, Ct., improvement in harness saddle-trees.

Alfred A. Stara, New-York, catamenial supporters.

David Swartz and Samuel Swartz, Tomsbrook, Va., improvement in fastening ploughs.

Robert Spencer, New-York, improvement in harness-saddles.

Paul Stillman, New-York, improvement in counting-machines.

Francis C. Treadwell, New-York, improvement in ovens.

Abner Whitely, Springfield, Ohio, improvement in track-clearers to grass-harvesters.

Philander Wilbar, Milan, Ohio, improvement in cheese-presses.

Melvin Shaw, East-Abington, Mass., assignor to Melvin Shaw and Daniel Gage Wheeler, of East-Abington aforesaid, improvement in clamps for sewing-machines.

Solomon S. Gray, South-Boston, assignor to S. S. Gray and S. A. Woods, of South-Boston aforesaid, for improved machine for planing lumber "out of wind."

Daniel Treadwell, Cambridge, assignor to Herbert H. and Frederick H. Stimpson, of Boston, improvement in operating furnaces.

Thomas W. Harvey, deceased, late of New-York, administrator and assignor to the Harvey Steel and Iron Company, for improvement in furnace for manufacturing wrought-iron directly from the ore.

James A. Brazier, Canton, Mass., assignor to Alfred B. Ely, of Boston, improvement in cog-gearing.

M. H. Merriam, Chelsea, Mass., and William W. Nichols, Boston, assignors to W. W. Nichols & Co., of Boston aforesaid, for improved tool-rest for turning-lathes.

Benj. F. Graves, of Boston, assignor to C. Knowlton, of Boston aforesaid, improved tool for boring recesses for castors, etc.

Sidney S. Turner, Westborough, Mass., assignor to Elmer Townsend, of Boston, improvement in sewing-machines.

Jacob Senneff, Philadelphia, improvement in machines for rolling shoulders on axles.

Wm. Van Arden, Poughkeepsie, improvement in machines for rolling shoulders on axles.

Robert Ross, Philadelphia, improved steam-valves.

Robert M. Abbe, Thompsonville, Ct., improvement in hog-pens.

Wm. T. Bazemore, Bibb County, Ga., improvement in cultivators.

Wm. Biddle, Lafayette, Ind., improvement in washing-machines.

Gardiner A. Bruce, Mechanicsburg, Ill., improvement in maize-harvesters.

Lebbeus Brooks, Great Falls, N. H., improvement in spirit-levels.

E. W. Bullard, Hardwick, Mass., improved window-blind holder.

Julius C. Dickey, Sandy Hill, N. Y., improvement in fastening skirts to saddletrees.

Isaac B. Dudrey, Athens, Ohio, stave-machine.

Isaac B. Dudrey, Athens, Ohio, improved stave-machine.

O. G. Ewings, Heart Prairie, Wis., improvement in ploughs.

Jos. W. Fawkes, Christiana, Pa., improvement in manure and lime-spreaders.

Richard Fanning, Clarksfield, Ohio, improved method of guiding cross-cut saws.

Joseph F. Flanders and Jeremiah A. Marden, Newburyport, Mass., improvements in leather-splitting machines.

J. T. Forbes, Coburg, Canada West, improvement in bedsteads for invalids. Patented in Canada, Feb. 2, 1854.

Nelson Gates, Cincinnati, Ohio, improvement in cast-hinges.

John Gleason, Northfield, Vt., improvement in slide-valves for steam-engines.

Daniel Hayward, Providence, R. I., improvement in manufacture of India-rubber.

Sam'l M. Hackman, Toursbrook, Va., improvement in seed-planters.

Abraham R. Hurst, Harrisburg, Pa., improvement in manure-excavators.

John H. King, Jr., Georgetown, D. C., improvement in seed-planters.

C. R. Landman, New-York, improvement in lamp-fillers.

Ezra Hommedieu, Chester, Ct., improvement in dies for making augers.

John G. McCauley, Stonebridge, Va., improvement in harrows.

John B. Nichols, Lynn, Mass., improvement in binding folder.

Whitman Price, Goldsborough, N. C., improvement in ploughs for planting potatoes.

Wm. Redick, Uniontown, Pa., improvement in seed-planters.

Titus H. Russell, Taftsville, Vt., improved sawmill dogs.

R. L. Sibbet, Shippensburg, Pa., improved method of tennoning spokes.

Andrew J. Smith, Piqua, Ohio, improvement in corn-shellers.

Jos. C. Strode, Westchester, Pa., puppet-valves for hydraulic-rams.

Joshua Stevens, Chicopee Falls, Mass., improvement in chairs for exercising.

Elisha Waters, Troy, N. Y., improvement in breast-cups.

Noah Warlick, Lafayette, Ala., improved horse-shoeing apparatus.

Chas. P. S. Wardwell, Lake Village, N. H., improved machine for cutting tennons.

Joseph D. West, New-York, improved hydraulic ram.

Jesse Whitehead, Manchester, Va., improvement in counter twist-speeders.

John Woolton, Boonton, N. J., improvement in nail-machines.

Dan'l Halliday, Ellington, Ct., improved governor for windmills.

Thos. C. Vice, Rochester, N. Y., method of furling and unfurling windmill sails.

Sidney S. Turner, Westborough, Mass., assignor to Elmer Townsend, Boston, improvement in sewing-machines.

Philemon A. Morley, Brooklyn, N. Y., assign r to James Bright, of Brooklyn aforesaid, improvement in glass lanterns.

Dexter H. Chamberlain, Boston, Mass., assignor to Wm. H. Meshural, New-Haven, Ct., improvement in lard-lamps.

James E. Crowell, Salem, Mass., assignor to himself, Edmund Smith, and Charles T. Stickney, of Salem aforesaid, machine for dressing ship-timbers.

Thomas Worrall, Mount Holly, N. Y., assignor to Mifflin Paul, of Mount Holly aforesaid, multiform moulding-plane.

Wilson Ager, Rohrsburg, Pa., improved millstone dress for cleaning grain.

Wm. B. Akins, Ithaca, improvement in flour-bolt.

Benj. Bray, Salem, Mass., improvement in spring-rollers for window-curtains, etc.

Chas. Clareni, New-York, improvement in attaching pulleys to shafts.

John Clark, Washington, D. C., improvement in chimney-caps.

Chas. H. Dana, West-Lebanon, N. H., improvement in seed-planters.

Louis Daser, Washington, D.C., improvement in seed-planters.

Augustus M. Eastman, New-York, improvement in making ribbon of strips of cloth.

Wm. H. Foster, Portsmouth, N. H., improved arrangement for reefing and furling top-sails from the deck of the vessel.

Jonathan G. Ginn, South-Thomaston, Me., improvement in machinery for worming rigging.

Geo. W. Griswold, Carbondale, improved portable door-fastener.

John Hinde, Schenectady, improvement in machine for breaking flax and hemp.

Moses G. Hubbard, New-York, improved method of hanging plane-stocks.

Adoniram Kendall, Cleveland, improved riving-machine.

Joseph Morss, Washington, D. C., improved driving-wheels of locomotive for ascending inclined planes.

Thos. M. Powell, Baltimore, improvement in ice-cream freezers.

Chas. Rowland, Belleville, Ill., improvement in tables.

Bradford A. Rugg and Ezra H. Benjamin, Oak Hill, N. Y., improved machine for feeding paper to printing-presses.

Daniel Warner, Jr., South-Hadley, Mass., improvement in machinery for dressing flax.

George L. Wild, Baltimore, improvement in stringed musical instruments.

Henry L. Clark, La Porte, Ind., improvement in doors for baggage-cars.

Leroy S. White, Chicopee, assignor to himself, Lewis White, of Hartford, Lyman White, of Springfield, and Augustus G. Stevens, of Manchester, N. H., improvement in railway-lamps.

Alex. H. Brown, Georgetown, D. C., improvement in brick-presses.